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Annual Hydrology Review: Everglades National Park and Big Cypress National Preserve 1976

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Everglades National Park, South Florida Research Center, P.O. Box 279, Homestead, Florida 33030

ANNUAL HYDROLOGY REVIEW:
EVERGLADES NATIONAL PARK
AND
BIG CYPRESS NATIONAL PRESERVE
1976

Paul W. Rose
U. S. National Park Service
Everglades National Park
Homestead, Florida 33030
September, 1977

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WATER RESOURCES DIVISION
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PREFACE

The intent of this first annual hydrology review is to provide insight into the dynamic hydrologic parameters of Everglades National Park and the Big Cypress National Preserve. Each year a great effort is made to obtain these hydrologic data and this review is an attempt to put these data in perspective throughout a calendar year. The calendar year was chosen so that this review could be correlated with the Dade County Annual Hydrologic Conditions Report published by the U.S. Geological Survey.

The 1976 annual review is concentrated about the hydrologic regime in Everglades National Park with secondary applications to the Big Cypress. Subsequent reviews will include additional information on the Big Cypress when a more complete hydrology record becomes established.

The review should serve as a ready reference for the hydrologic conditions which prevailed in the Park for the year. The format is flexible and changes are certain. In order to facilitate the best possible format, while meeting the needs of all possible users, your comments would be appreciated. Through a coordinated effort this annual review could become a useful tool providing greater insight into hydrologic conditions in the Park for researchers and as a means to assist in better resource management of Everglades National Park.

OUTLINE

ANNUAL HYDROLOGY REVIEW: EVERGLADES NATIONAL PARK AND BIG CYPRESS NATIONAL FRESH WATER PRESERVE, 1976

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I. INTRODUCTION

The dynamic equilibrium of the hydrologic parameters and the response of the water budget directly affects all ecological aspects of Everglades National Park. An intensive hydrologic program of water management is mandatory if the quality of the Everglades is to be preserved. The initial thrust for such a program depends on a complete understanding of the hydrologic balance in the Park.

Throughout the years both the National Park Service and the U.S. Geological Survey have documented hydrologic inputs for South Florida and the Everglades. Some monitoring stations have periods of record exceeding 30 years of tabulation. The program has developed to such an extent that presently there are over 80 hydrologic monitoring stations (continuous and discontinuous) throughout Everglades National Park. These records, then, are the key to the past which enable researchers to assess present hydrologic conditions and formulate conclusions regarding the nature of the hydrologic balance for a given year.

The purpose of the 1976 Annual Hydrology Review is to summarize and explain hydrologic conditions experienced in Everglades National Park and Big Cypress National Preserve during the calendar year. The hydrologic parameters examined for 1976 include: precipitation, temperature, water levels, water deliveries to Everglades National Park, and discharge. The data are summarized both graphically and in tabular formats to provide greater insight into hydrologic conditions during 1976.

II. CLIMATE

Everglades National Park is situated at the southern terminus for the State of Florida. The Park is a sub-tropical wilderness located between the geographic coordinates N 24° 50' 05" and N 25° 50' 20" latitude and W 80° 20' 20" and W 81° 30' 10" longitude. The proximity of the Park to the tropics, combined with a marine influence, has produced a climatic regime with mild, dry winters and warm, wet summers.

According to the Koppen climatic classification scheme, Everglades National Park is situated in the Tropical Rainy (Aw) group. This classification characterizes a tropical wet/dry climate marked by dry winters and wet summers.

The climate of the Park is influenced by the Atlantic Ocean and the Gulf of Mexico. These oceanic waters have heat retentive capacities which liberate heat during winter months, thereby maintaining mild ambient temperatures. During the summer season the marine influence helps to maintain a uniform diurnal temperature.

Three separate weather systems throughout the year have been associated with precipitation patterns in South Florida (Thomas, 1970). The southeasterly trades influence the climate during the months of April, May, June, September, October and November. Coinciding with the southeasterly air flow, rainfall tends to be the greatest during some of these months. Conversely, rainfall greatly diminished with the arrival of

the northerlies in January and February. Finally, intense local thunderstorms are generated in July and August when hot surface temperatures encounter the cooler air aloft.

The climatological monitoring program at Everglades National Park is in conjunction with the weather programs at the National Climatic Center, National Oceanic and Atmospheric Administration and the Environmental Data Service. The National Park Service has been a cooperating agency for over 28 years at Everglades National Park reporting climatic data to the Weather Service. There are four weather stations located in the Park (Fig. 1). Each station has been recording climatological data (temperature and precipitation) for numerous years. The longest term station in the Park is the Everglades City Ranger Station, reporting climatic data for 50 years, followed by the Tamiami Ranger Station (35 years), Royal Palm Ranger Station (28 years) and Flamingo Ranger Station (25 years) (Table 1).

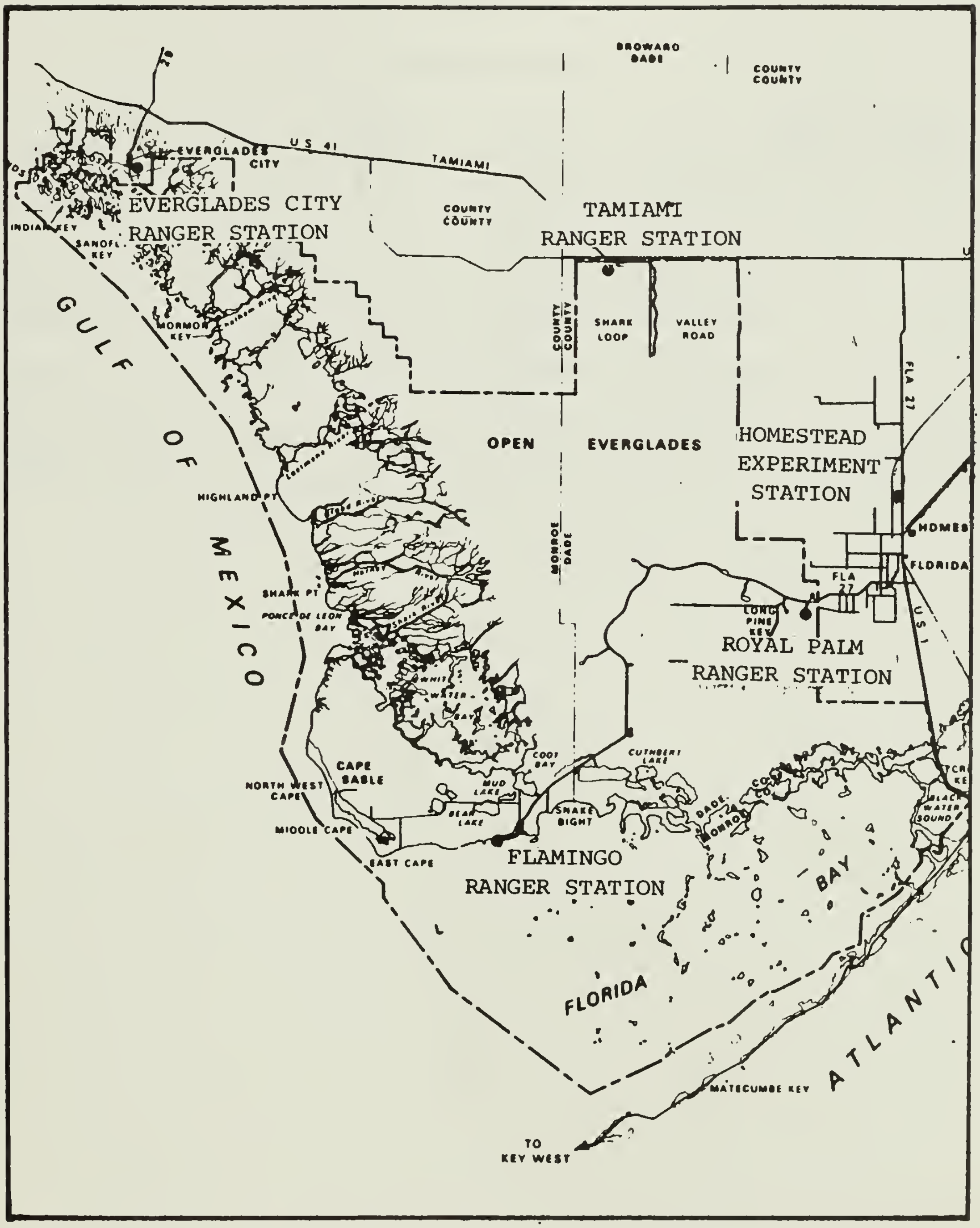


Figure l: Map of Everglades National Park and South Florida Weather Stations

Table 1. Weather Station Index for Everglades National Park

CLIMATE

Station Index

Station	County	MSL Elevation	Latitude	Longitude	Period of Record	
					Temp.	Precip.
Royal Palm	Dade	7	N°25'23"	W°80'36"	28	28
Flamingo	Monroe	3	N°25'09"	W°80'55"	25	25
Everglades	Collier	5	N°25'51"	W°81'23"	50	50
Tamiami	Dade	15	N°25'45"	W°80'50"	35	35
Homestead Exp. Sta.	Dade	11	N°25'30'	W°80'30"	66	66

TEMPERATURE

Temperatures throughout Everglades National Park and vicinity were very close to normal during 1976. An analysis of the four weather stations in the Park (Flamingo, Tamiami, Everglades City, and Royal Palm) plus the Homestead Experiment Weather Station determined that annual temperatures were slightly below normal for the year. However, the difference between the mean annual temperature for each station and the percentage deviation from the mean was insignificant.

The highest average maximum monthly temperature was recorded at the Tamiami Ranger Station (Forty Mile Bend). During the month of July, this station had an average daily maximum temperature of 90.6°F (32.5°C). Conversely, the lowest average monthly temperature for Everglades National Park was recorded at the Everglades City Ranger Station. During the month of January the average minimum temperature at this station was 49.5°F (9.72°C).

The station which experience temperatures nearest to the norm throughout calendar year 1976 was the Homestead Experiment Station (Table 2). Accumulated temperatures at this station were deficient by only 15°F (-9.4°C) from the 66 year accumulated annual mean. This insignificant deviation in accumulated temperatures enabled the Homestead Experiment Station to achieve 99.8 percent of the normally expected temperature readings throughout the year.

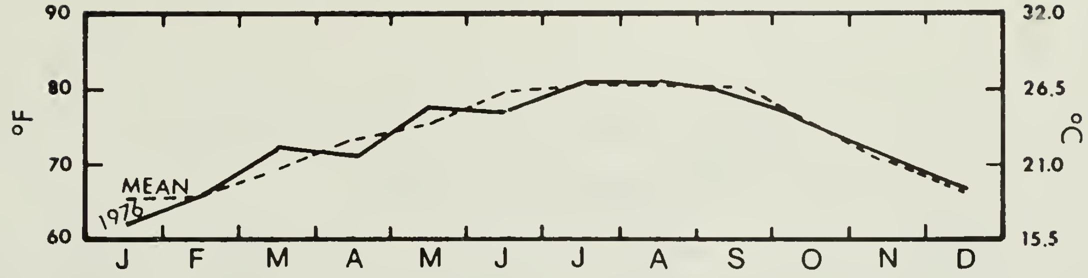
The greatest difference between mean monthly temperature and actual recorded temperature for the Homestead Experiment Station occurred in January, April, March and June (Fig. 2). The remaining months during 1976 experienced a temperature range ± 1°F of the normally expected reading.

The Tamiami Ranger Station experienced 98.1 percent of the normally accumulated temperatures during 1976 (based on 35 years of record). The temperature variance was the greatest in January, March, April and December (Fig. 2). The rest of the months throughout the year experienced mean temperatures in the same range (± 1°F) as was experienced at the Homestead Experiment Station (Table 3).

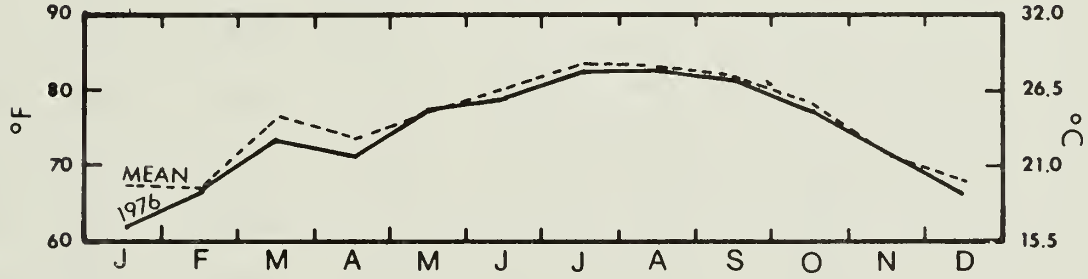
Everglades City experienced the greatest difference between accumulated mean temperatures and the normally expected yearly averages. The station was deficit by 180°F (82.2°C), however, it was still close to the mean, experiencing 98.1 percent of the normally expected temperatures (based on 50 years record) (Table 4). During most of the months throughout the year Everglades City experience temperature means which deviated greater than ±2°F from normal (Fig. 2).

The other stations, Royal Palm and Flamingo, even though they have long periods of record, are lacking mean temperature values (Fig. 2). Therefore, an evaluation of their data is impossible at this time. However, monthly temperature ranges throughout 1976 have been included to provide insight into temperature occurrence at these stations (Table 5, 6 respectively).

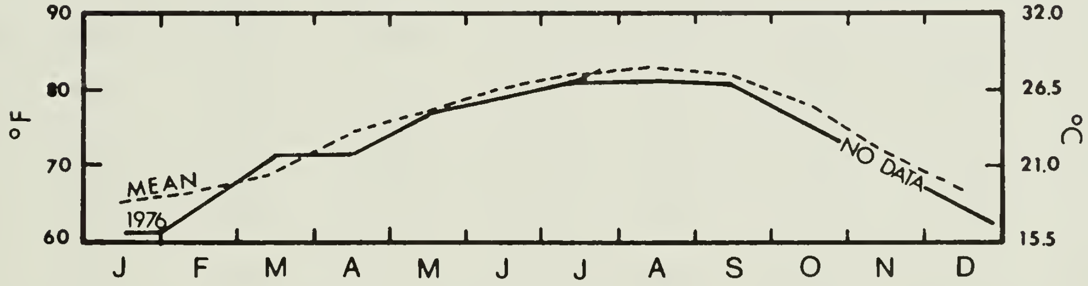
Homestead Experiment Station



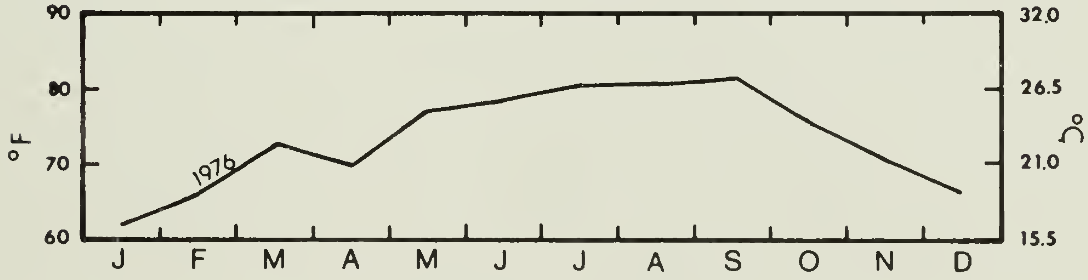
Tamiami Ranger Station



Everglades City Ranger Station



Royal Palm Ranger Station*



Flamingo Ranger Station*

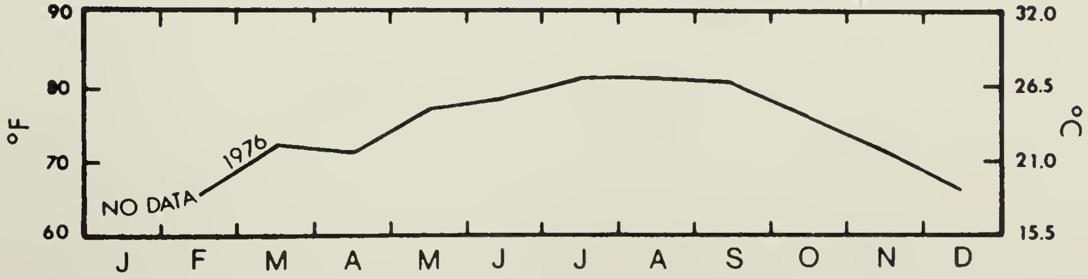


Figure 2: Everglades National Park Temperatures (^{O}F) for 1976

Table 2. 1976 Homestead Experiment Weather Station

Monthly Temperatures (^{o}F)

Month	Avg. Max.	Avg. Min.	Avg.	Departure fm mean	Highest Temp.	Date	Lowest Temp.	Date
Jan.	73.9	50.8	62.4	-2.9	83	8	35	18
Feb.	77.0	55.2	66.1	0.0	83	22	40	9
Mar.	82.5	62.0	72.3	2.9	88	23	52	18
Apr.	82.4	60.2	71.3	-1.8	90	1	50	3
May	85.5	68.6	77.1	1.2	90	26	63	5
Jun.	85.5	69.8	77.7	-1.5	89	30	66	1
Jul.	90.2	71.7	81.0	0.5	95	16+	68	11
Aug.	89.6	72.3	81.0	0.0	92	21+	69	25
Sept.	88.7	70.6	79.7	-0.5	92	29	67	26
Oct.	84.4	66.3	75.4	-0.9	90	17	58	22
Nov.	79.7	62.9	71.3	0.9	88	27	52	9
Dec.	77.1	56.9	67.0	0.6	86	13	41	28

Table 3. 1976 Tamiami Trail Ranger Station

Monthly Temperatures (^{o}F)

Month	Avg. Max.	Avg. Min.	Avg.	Departure fm mean	Highest Temp.	Date	Lowest Temp.	Date
Jan.	74.7	51.6	63.2	-4.0	83	27	39	9
Feb.	77.1	56.8	67.0	-0.9	85	22	42	9
Mar.	83.7	63.3	73.5	2.9	88	21	51	18
Apr.	84.4	58.7	71.6	-2.1	91	23	51	12
May	86.5	67.8	77.2	0.3	91	27+	62	5
Jun.	86.6	71.9	79.3	-1.3	90	30	67	4
Jul.	90.6	74.9	82.8	0.4	94	17	70	11
Aug.	89.8	74.6	82.2	-1.0	93	21	71	19
Sept.	88.9	74.8	81.9	-0.5	92	10	71	12
Oct.	85.7	69.4	77.6	-0.8	91	8	58	22
Nov.	80.3	62.9	71.6	-1.2	-	-	52	23
Dec.	76.2	56.6	66.4	-2.0	85	7	44	29

RAINFALL

Precipitation serves as a significant natural source of fresh water supply into the Everglades ecosystem. Yearly variations in the amounts and distribution of rainfall supplied to this region has a direct impact upon the ecology of the Park. Rainfall inputs into Everglades National Park are monitored and permanently recorded daily at the four Park weather stations previously mentioned (Fig. 1).

The mean distribution for rainfall throughout Everglades National Park in 1976 was calculated through the use of available data. This allowed isohyets for the Park to be delineated. These isohyets provide utility in estimating areas of equal rainfall amounts during 1976 (Fig. 3). However, due to the complexity of precipitation distribution in the south Florida environment, deviations in actual precipitation amounts can be expected. Hence, the isohyets cannot provide actual rainfall totals but rather they do provide insight, based on mean accumulated precipitation amounts, into the predicted spatial distribution of rainfall throughout Everglades National Park. The resulting isohyets depict a precipitation distribution increasing toward the interior of the Everglades and decreasing in accumulated totals toward the coastline of Florida.

During the calendar year 1976, Everglades National Park received less than normal rainfall amounts. The Park was deficient by 2.23 inches (5.66 cm) of rainfall. Normally the Park should receive a mean total of 53.78 inches (136.66 cm) of precipitation yearly (based on 138 years of total

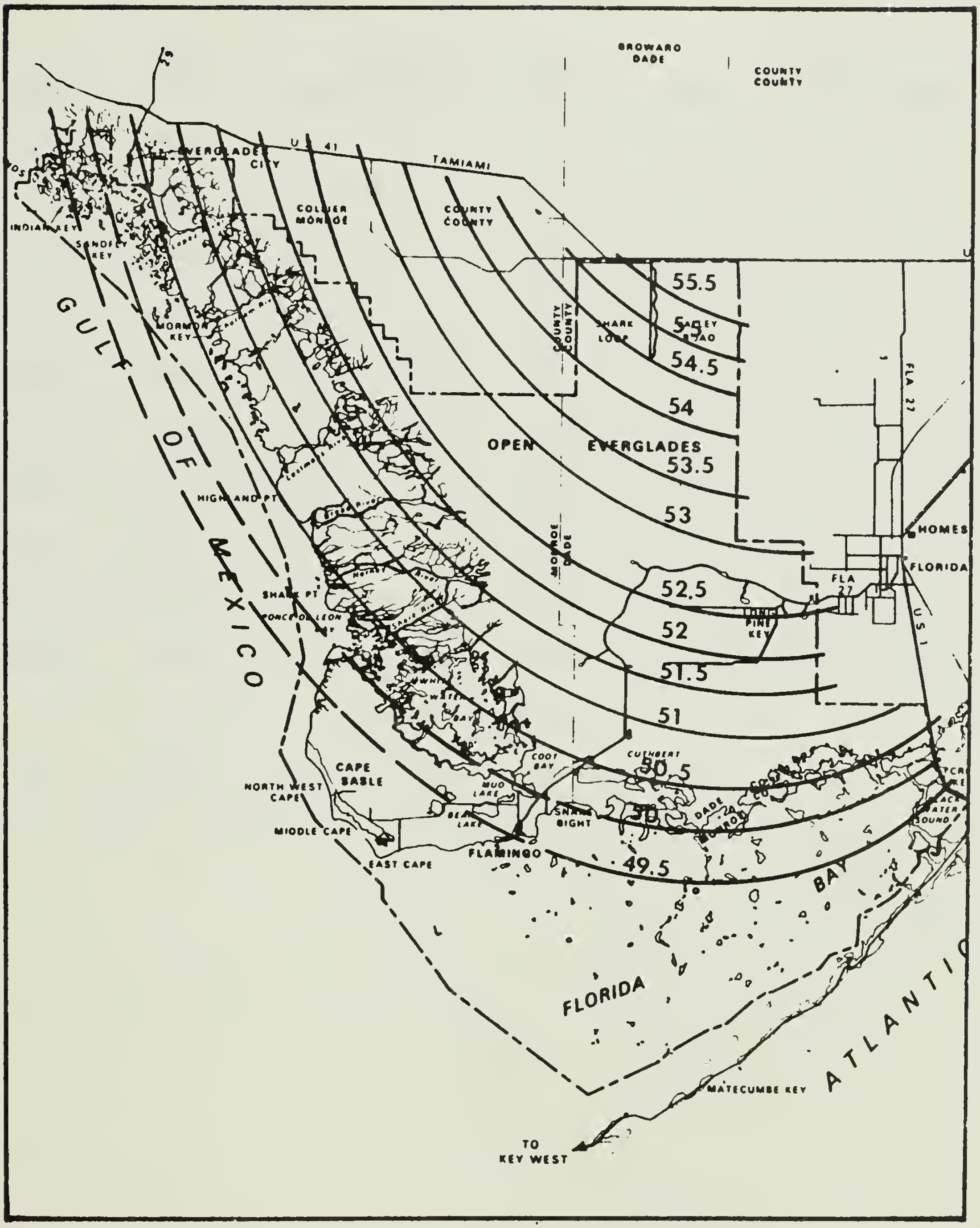


Figure 3: 1976 Mean Rainfall Isohyets, Everglades National Park

Isolines = 0.50 inches rainfall

Table 4. 1976 Everglades City Ranger Station

Monthly Temperatures (^{O}F)

Month	Avg. Max.	Avg. Min.	Avg.	Departure fm mean	Highest Temp.	Date	Lowest Temp.	Date
Jan.	72.8	49.5	61.2	-4.4	81	14	35	19
Feb.	72.8	55.5	64.2	-	82.5	17	42	10
Mar.	81.4	62.7	72.1	-	85	3+	47	18
Apr.	81.6	61.8	71.7	-	88	21	55	17
May	84.2	69.8	77.0	-0.5	87	14+	63	5
Jun.	86.9	71.4	79.2	-1.6	91	15	69	10+
July	88.7	73.2	81.0	-1.3	95	19	67	23
Aug.	89.1	73.9	81.5	-1.4	93	26	70	18
Sept.	88.5	72.8	80.7	-1.3	92	9	68	13
Oct.	84.3	66.4	75.4	-2.5	89	7+	52	22
Nov.	-	-	-	-	-	-	-	-
Dec.	74.9	53.9	64.4	-2.4	87	12	41	27

Table 5. Royal Palm Ranger Station

Monthly Temperatures (^{o}F)

Month	Avg. Max.	Avg. Min.	Avg. Departure fm mean	Highest Temp.	Date	Lowest Temp.	Date
Jan.	74.4	50	62.2	81	26	31	18
Feb.	77.6	54.9	66.3	84	19	39	11
Mar.	82.5	62.2	72.4	90	27	48	18
Apr.	80.2	59.8	70	86	7	48	13
May	84.6	70	77.3	88	13	58	5
Jun.	84.4	72.7	78.6	89	27	70	1, 7, 10, 11
Jul.	88.4	72.6	80.5	93	17	70	11
Aug.	87.5	73.5	80.5	92	23, 8	70	2+
Sept.	89.2	73.3	81.3	92	29	68	30
Oct.	85.1	65.7	75.4	91	19	56	23
Nov.	78	62.8	70.4	86	18	50	9
Dec.	76.5	56.8	66.6	86	13	41	27

Table 6. 1976 Flamingo Ranger Station

Monthly Temperatures (^{o}F)

Month	Avg. Max.	Avg. Min.	Avg.	Departure fm mean	Highest Temp.	Date	Lowest Temp.	Date
Jan.	-	-	-	-	-	-	-	-
Feb.	76.1	55.3	65.7	-	82	23	40	11+
Mar.	81.4	63.4	72.4	-	84	11	52	19
Apr.	81.8	60.7	71.3	-	86	29	52	12
May	84.3	70.0	77.2	-	88	23	62	29
Jun.	85.2	72.2	78.7	-	-	-	69	17+
Jul.	89.0	73.6	81.3	-	92	17+	69	10
Aug.	88.7	73.6	81.2	-	92	12	71	28
Sept.	88.1	73.0	80.6	-	90	29	70	26
Oct.	84.6	66.6	75.6	-	90	10	58	28
Nov.	80.1	62.4	71.3	-	85	30+	46	22
Dec.	77.7	55.5	66.6	-	83	15+	40	28

recorded observations at the four monitoring stations in the Park). However, during the 1976 year, the four station mean was only 51.55 inches (130.94 cm) accumulated rainfall (Table 7).

The four station precipitation mean for Everglades National Park during 1976 fluctuated above and below the normally expected rainfall total throughout the year (Fig. 4). During the months of January, March, June, July, September, and October, the four station average was less than was normally expected for the Park. July experienced the greatest monthly precipitation deviation from the mean, recording a rainfall deficiency of three inches (7.62 cm) below normal. Conversely, precipitation totals exceeded the norm during the months of February, April, May, August, November and December. August was the only month in which precipitation amounts greatly exceeded the normally expected rainfall totals for the Park (4.5 inches (10.43 cm) above normal).

Three weather stations in the Park experienced normal amounts of rainfall during the 1976 calendar year. Two of these stations reported slightly greater than normal totals of precipitation with Tamiami experiencing +0.42 inches (+1.07 cm) and Royal Palm receiving +0.17 inches (+0.43 cm) by year's end (Table 8, 9 respectively). Flamingo was the other station near the norm for accumulated rainfall; however, it was slightly below normal with a deficit of 1.28 inches (-3.25 cm) (Table 10).

Each of these three stations (Royal Palm, Tamiami and Flamingo) reported similar precipitation trends throughout the year. During the months of January, March, July and October, each of these stations

Table 7. Four Station Rainfall Data, Everglades National Park

	1976 Year		Period of Record	
Month	4 Station Total Accumulated	4 Station Average	4 Station Accumulated Means	4 Station Mean
Jan.	2.26	0.57	6.11	1.53
Feb.	8.60	2.15	6.77	1.69
Mar.	1.67	0.42	6.33	1.58
Apr.	10.50	2.63	8.93	2.23
May	32.70	8.18	22.83	5.71
Jun.	35.89	8.98	38.31	9.58
Jul.	15.30	3.83	28.58	7.15
Aug.	47.19	11.80	28.81	7.20
Sept.	27.36	6.84	35.48	8.87
Oct.	10.81	2.70	21.55	5.39
Nov.	7.38	1.85	6.44	1.61
Dec.	6.54	1.64	4.97	1.24

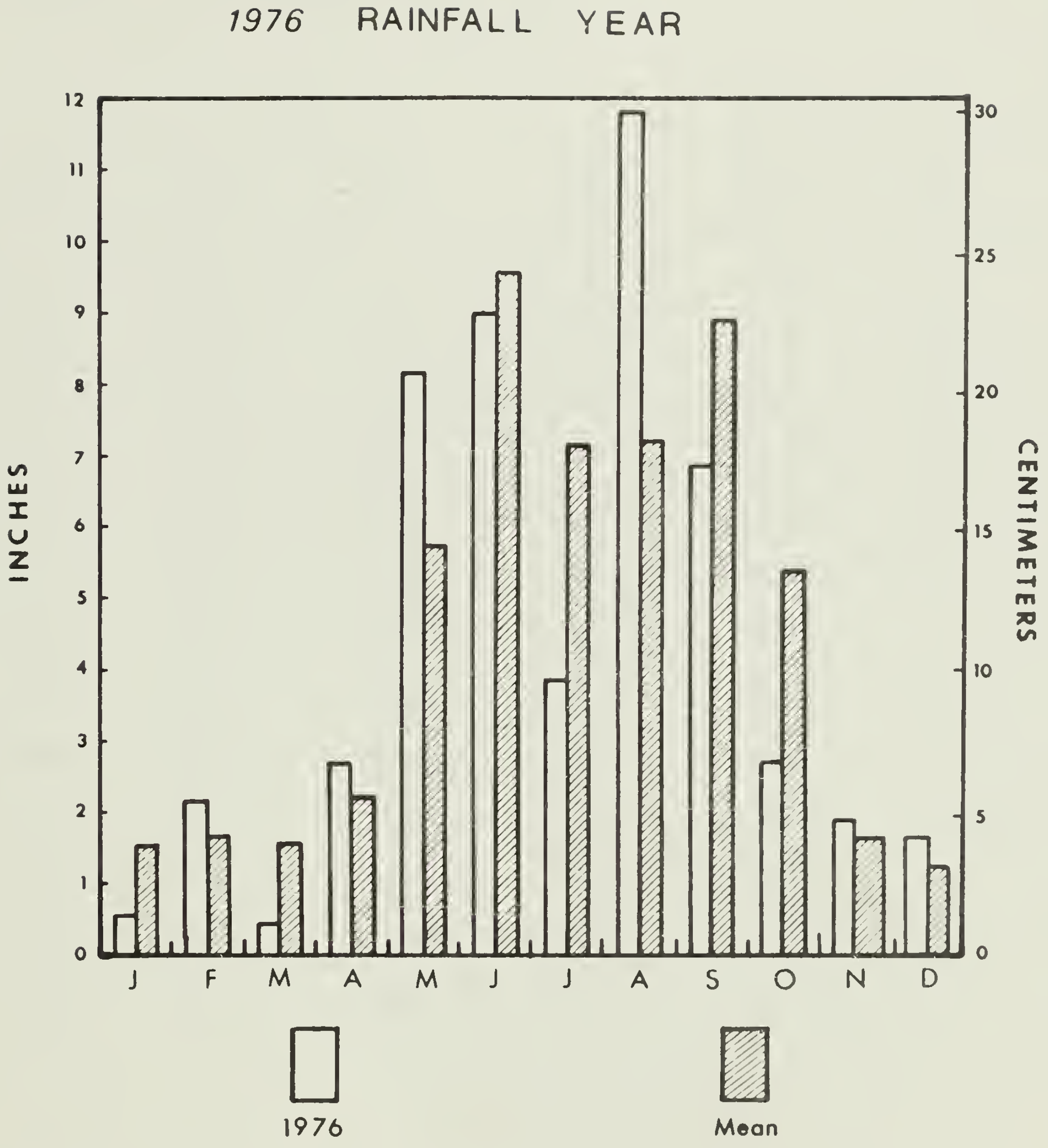


Figure 4: 1976 Rainfall Year, Average of All Four Weather Stations

Table 8. 1976 Tamiami Ranger Station

RAINFALL

Month	Total	Mean	% of Mean	Greatest	Date
Jan.	0.53	1.43	37	0.28	17
Feb.	2.20	1.47	150	1.24	25
Mar.	0.55	1.85	30	0.42	22
Apr.	1.34	2.39	56	0.81	6
May	11.96	6.05	198	3.63	29
Jun.	9.94	9.27	107	2.80	3
Jul.	5.07	8.12	62	1.35	7
Aug.	13.01	7.61	171	2.10	21
Sept.	6.76	9.00	75	1.46	6
Oct.	1.20	5.77	21	0.73	1
Nov.	1.45	1.49	97	0.59	22
Dec.	1.97	1.11	177	1.21	24
Total	55.96	55.54	101		

Table 9. 1976 Royal Palm Ranger Station

RAINFALL

Month	Total	Mean	% of mean	Greatest	Date
Jan.	0.93	1.53	61	0.71	16
Feb.	2.11	1.82	116	1.07	24
Mar.	0.20	1.55	13	0.20	17
Apr.	3.85	2.47	156	1.76	6
May	8.14	6.46	126	2.70	15
Jun.	8.13	10.36	78	1.93	10
Jul.	3.94	7.10	55	1.38	23
Aug.	13.95	7.77	180	2.80	19
Sept.	8.82	8.63	102	2.08	19
Oct.	2.17	6.36	34	0.85	10
Nov.	4.23	2.17	195	2.62	3
Dec.	1.19	1.27	94	0.92	24
Total	57.66	57.49	100		

Table 10. 1976 Flamingo Ranger Station

RAINFALL

Month	Total	Mean	% of Mean	Greatest	Date
Jan.	0.46	1.57	29	0.11	18
Feb.	2.26	1.77	128	1.00	25
Mar.	0.54	1.51	36	0.24	17
Apr.	3.41	1.86	183	0.96	21
May	7.29	5.85	125	1.72	4
Jun.	7.53	9.04	83	2.26	10
Jul.	0.84	5.53	15	0.55	22
Aug.	14.38	6.53	220	4.10	19
Sept.	6.55	8.19	80	1.82	6
Oct.	3.00	5.08	59	1.96	1
Nov.	0.87	1.43	61	0.40	10
Dec.	1.33	1.17	114	0.83	24
Total	48.26	49.54	103		

reported less than mean precipitation amounts (Fig. 5). July was especially dry, with Tamiami and Royal Palm receiving 3.00 inches (-7.62 cm) less than normal precipitation and Flamingo reporting a deficit of 4.69 inches (11.9 cm).

Precipitation amounts for the rest of 1976 at Tamiami, Royal Palm, and Flamingo Ranger Stations were either at the mean or slightly greater than normal. The only exception would be the intense rainfall which was recorded at each of these stations during the month of August. Each of these stations received at least six inches (15.24 cm) of precipitation above the mean. This additional supply of precipitation during August counteracted the rainfall deficit during July, thus allowing these three stations to approximate normal rainfall conditions for the year.

Everglades City was the only station in Everglades National Park which reported a significant precipitation deficiency. Rainfall was 6.14 inches (-15.60 cm) below normal during 1976 at this station (Table 11). On a monthly comparison this variance between the actual rainfall total and the normally expected precipitation amounts was not that great (Fig. 5). However, by contrasting the yearly accumulated mean versus the actual accumulation, the deficit becomes apparent.

1976 RAINFALL BY STATION

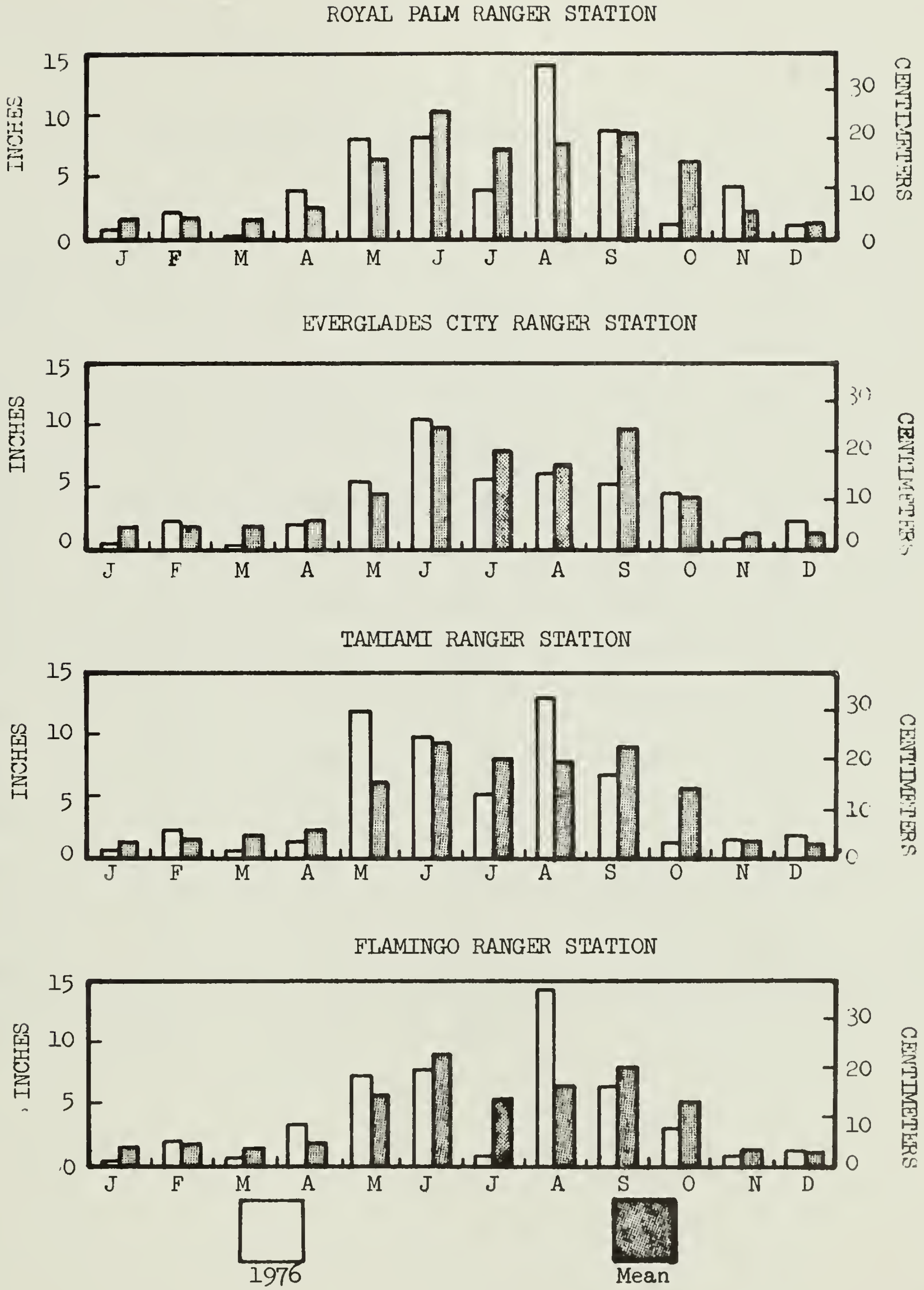


Figure 5 : 1976 Rainfall and Mean by Station

Table 11. 1976 Everglades City Ranger Station

RAINFALL

Month	Total	Mean	% of Mean	Greatest	Date
Jan.	0.34	1.58	22	0.23	28
Feb.	2.03e	1.71	119	.05	7
Mar.	0.38	1.80	21	0.62	7
Apr.	1.90	2.21	86	1.33	8
May	5.31	9.47	119	0.98	29
Jun.	10.29	9.64	108	2.69	30
Jul.	5.45	7.83	70	1.65	21
Aug.	5.85	6.90	85	1.02	22
Sept.	5.23	9.66	54	1.87	9
Oct.	4.44	4.34	102	2.07	18
Nov.	0.83	1.35	61	0.58	22
Dec.	2.05	1.42	144	1.15	24
Total	44.10	50.24	89		

III. WATER LEVELS

Surface water is one of the most prominent and characteristic natural features in South Florida. The mechanism for overland sheet flow is enacted following sufficient inputs of rainfall into the hydrologic regime. The surface water slowly inundates the flat, broad plain of the Everglades as a thin film. Even though the depth is not of great extent, the impact is widespread and life flourishes throughout the area. Eventually, the anemic flow reaches the ultimate base level, the ocean.

The National Park Service has established an extensive hydrologic monitoring network throughout all areas of Everglades National Park (Fig. 6). Presently there are over 80 hydrologic monitoring stations in the Park. These stations range from sophisticated satellite telemetry stations which continuously monitor stage levels to staff gages which are read discontinuously. National Park Service hydrology personnel work in conjunction with the U.S. Geological Survey to obtain and document water level data at these monitoring stations.

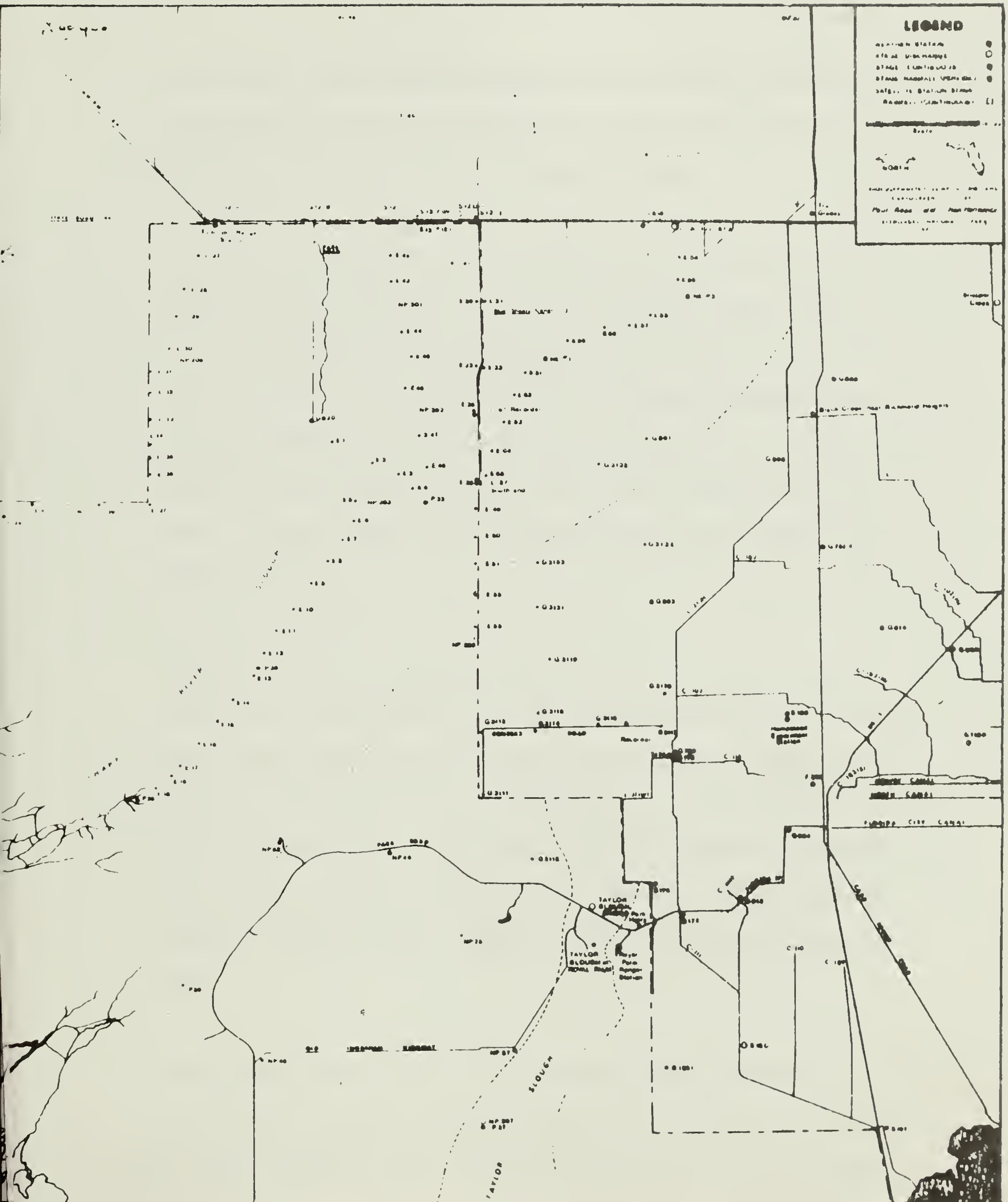


Figure 6. Everglades National Park Hydrologic Monitoring Network

1976 WATER LEVELS

Water Levels at most monitoring stations fluctuated above and below the mean value during 1976. The response of the stage to the seasonal inputs of rainfall was definitely apparent throughout the year.

The first four months of 1976 experienced water levels which were considerably lower than normal at most of the gaging stations (Table 12). This deficiency can be associated with a corresponding deficit rainfall total in the Park during this period of time. Significant perturbations in the lower than normal water levels were experienced at the end of February and mid-April when heavy rains caused "pooling" of water to occur. However, several days following the disturbance, water levels quickly receded.

The water levels for the months from May through August were higher than normal for this period of time. Only two gaging stations experienced normal stage conditions while all other stations reported greater than mean values (Table 12). Rainstorms beginning in early May with the onset of the wet season supplied the impetus required to significantly increase the water levels to above normal. Additional supplies of rainfall helped to maintain a good water base thereby keeping levels slightly above the mean.

During the last four months in 1976 (September through December) water levels varied at all monitoring stations (Table 12). With the arrival of the dry season rainfall steadily diminished causing water levels to drop.

Table 12: 1976 Relative Water Levels, Everglades National Park

STATION		JAN - APRIL			MAY - AUG			SEPT - DEC		
		$< \bar{x}$	$\bar{x}$	$> \bar{x}$	$< \bar{x}$	$\bar{x}$	$> \bar{x}$	$< \bar{x}$	$\bar{x}$	$> \bar{x}$
HEADQUARTERS		✓					✓		✓	
TAYLOR SLOUGH at BRIDGE		✓					✓	✓		
NP	44	✓								
NP	62	✓					✓	✓		
NP	201		✓							
NP	202		✓				✓		✓	
NP	203						✓		✓	
NP	204								✓	
NP	205						✓		✓	
NP	206						✓			✓
NP	207						✓			
P	33		✓				✓		✓	
P	34	✓					✓	✓		
P	35	✓				✓		✓		
P	36	✓					✓		✓	
P	37	✓					✓	✓		
P	38	✓					✓	✓		
0228	8900	✓				✓		✓		
0228	8990		✓				✓		✓	
0228	8800	✓					✓	✓		
0228	8780	✓					✓			

Eventually, water levels dipped slightly below the mean stage at half of the stations (Table 12). The remaining stations (except one) concluded this period of time experiencing mean water levels.

Water level contour maps were prepared to depict the seasonal surface water conditions in Everglades National Park during the wet and dry season in 1976. The distribution of surface water differs greatly between these time periods. Two dates were chosen to represent the extremes for each period: April 1, 1976 for the dry season and September 20, 1976 for the wet season.

One of the lower water level periods during the dry season was experienced near the beginning of April. The lowest water level recorded during the dry season was at the recording station P-34 which reported a water level of -0.66 feet MSL (-0.20 m). Conversely, the highest water level at this date in Everglades National Park was recorded near the control structures by NP-201 indicating a stage of 6.51 feet MSL (1.98 m).

The dry season contours delineated an overland sheet flow with the deepest water centered about the Shark River Slough (Fig. 7). The impact of the Slough was quite apparent on the surface water movement. The deepest water during the dry season penetrated the furthest into the interior of the Everglades via the central conduit of the slough. Likewise, Taylor Slough in the eastern region funneled water into the Park. However, the higher pinelands and pinnacle rock regions directly influenced the water movement and hence the contours became concave indicating dryer areas in these sections of the Park.

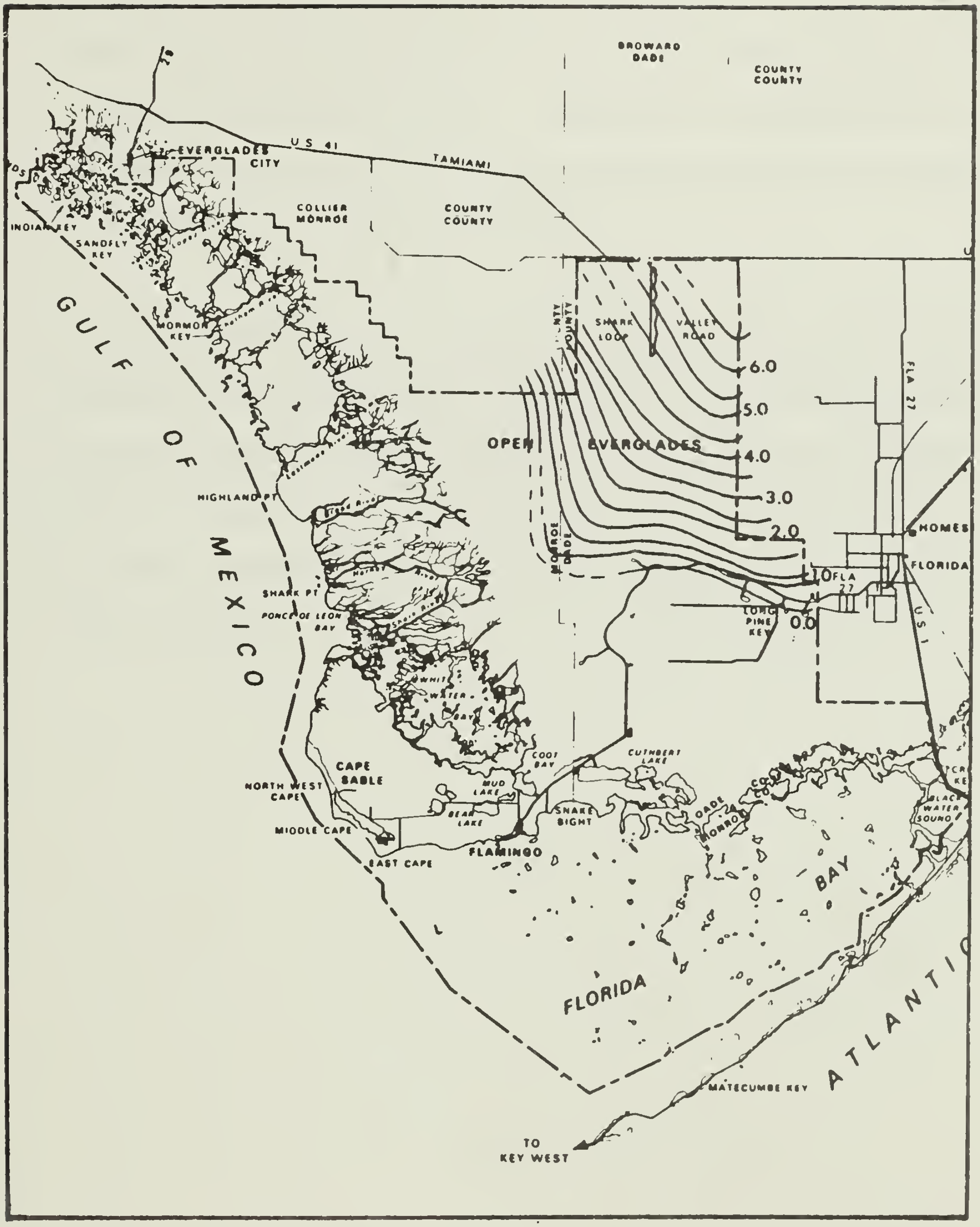


Figure 7: April 1, 1976: Low Water Contours
(Contour Interval 0.5 Feet)

During the wet season, the optimal date for analysis of water level conditions in Everglades National Park was September 20, 1976. The highest stage during the wet season was reported at 7.00 feet MSL (2.13 m) at the monitoring station NP-201. Overland flow was reported at all monitoring stations and the lowest level recorded occurred at P-37 where the water level was 1.85 feet MSL (0.56 m).

The contours during the wet season depicted the overall dispersal of water throughout the Everglades (Fig. 8). The isolines became further apart and the direct influence of the sloughs decreased. Because of the increased supplies of water from rainfall and greater discharges of water through the control structures, deeper water penetrated further into the interior of the Everglades.

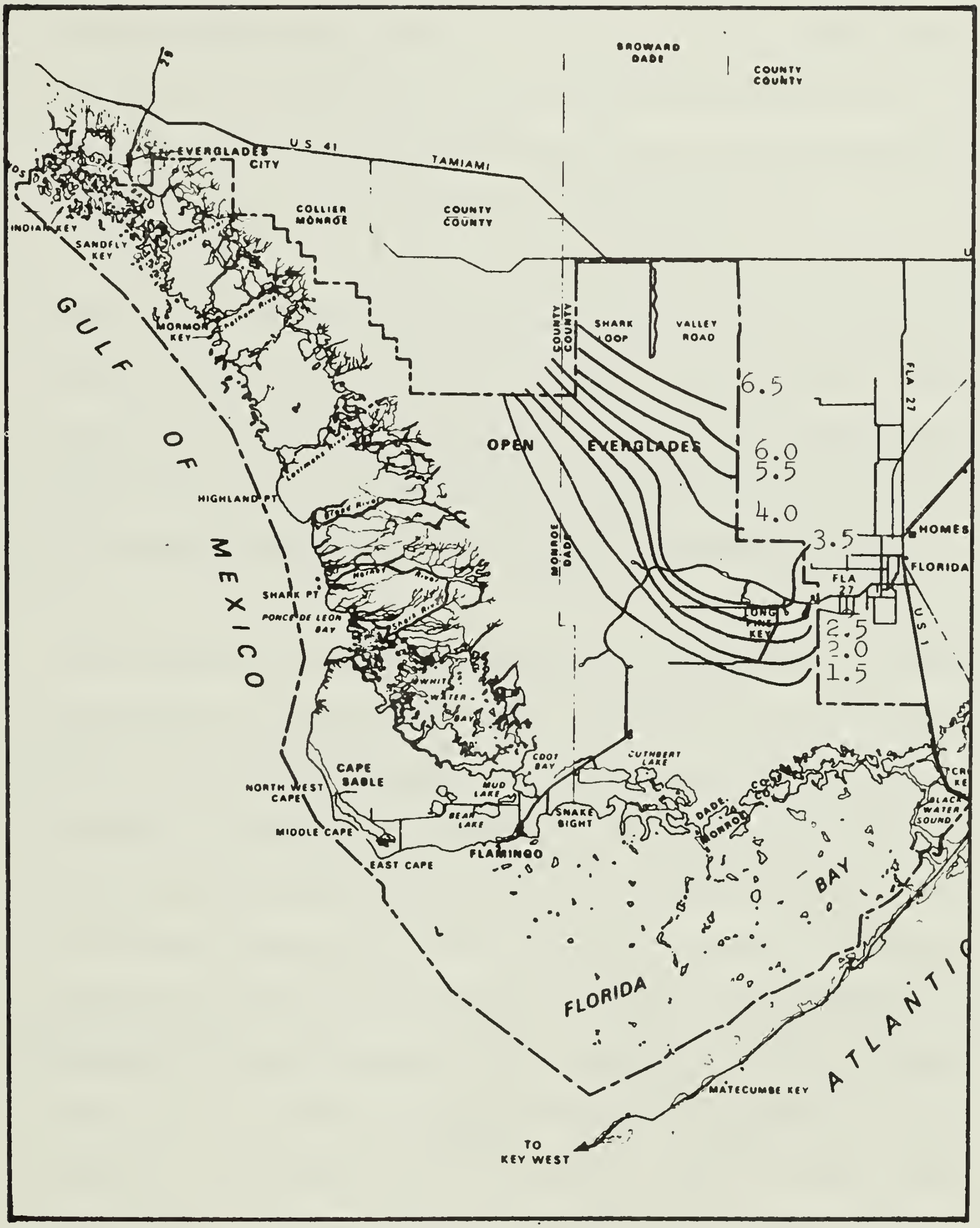


Figure 8. September 20, 1976, High Water Level Contours, Everglades National Park

SHARK RIVER SLOUGH

The Shark River Slough, serving as a major arterial for surface water movement, is the lifestream for much of Everglades National Park. The slough depends upon rainfall and allocations of water released through the control structures to provide inputs into its hydrologic regime.

Within the Shark River Slough there are five primary water level recording stations which continuously monitor the stage (Fig. 6). These stations are P-33, P-36, P-35, P-38 and NP-62. Each of these stations possess a long period of record and four of them are included in the annual U.S. Geological Survey's publication, Water Resources Data for Florida.

The station which has the longest period of record and is of prime importance for monitoring water levels in the Shark River Slough is P-33. During 1976 this station was either at or above mean levels throughout the year (Fig. 9). During January and February, P-33 experienced water levels which were slightly greater than normal, even though rainfall was deficit and discharge through the control structures was normal. This trend continued through the months of March and April. Towards the middle of May and into June greater than normal precipitation amounts, combined with an above minimum scheduled delivery rate through the control structures, enable water levels to increase far above the normal stage. During July, water levels stabilized at near normal conditions while the water deliveries into the slough were above the mimimum scheduled and rainfall amounts were less than normally expected. The only other significant fluctuation above normal water conditions at P-33 during 1976

SHARK RIVER SLOUGH

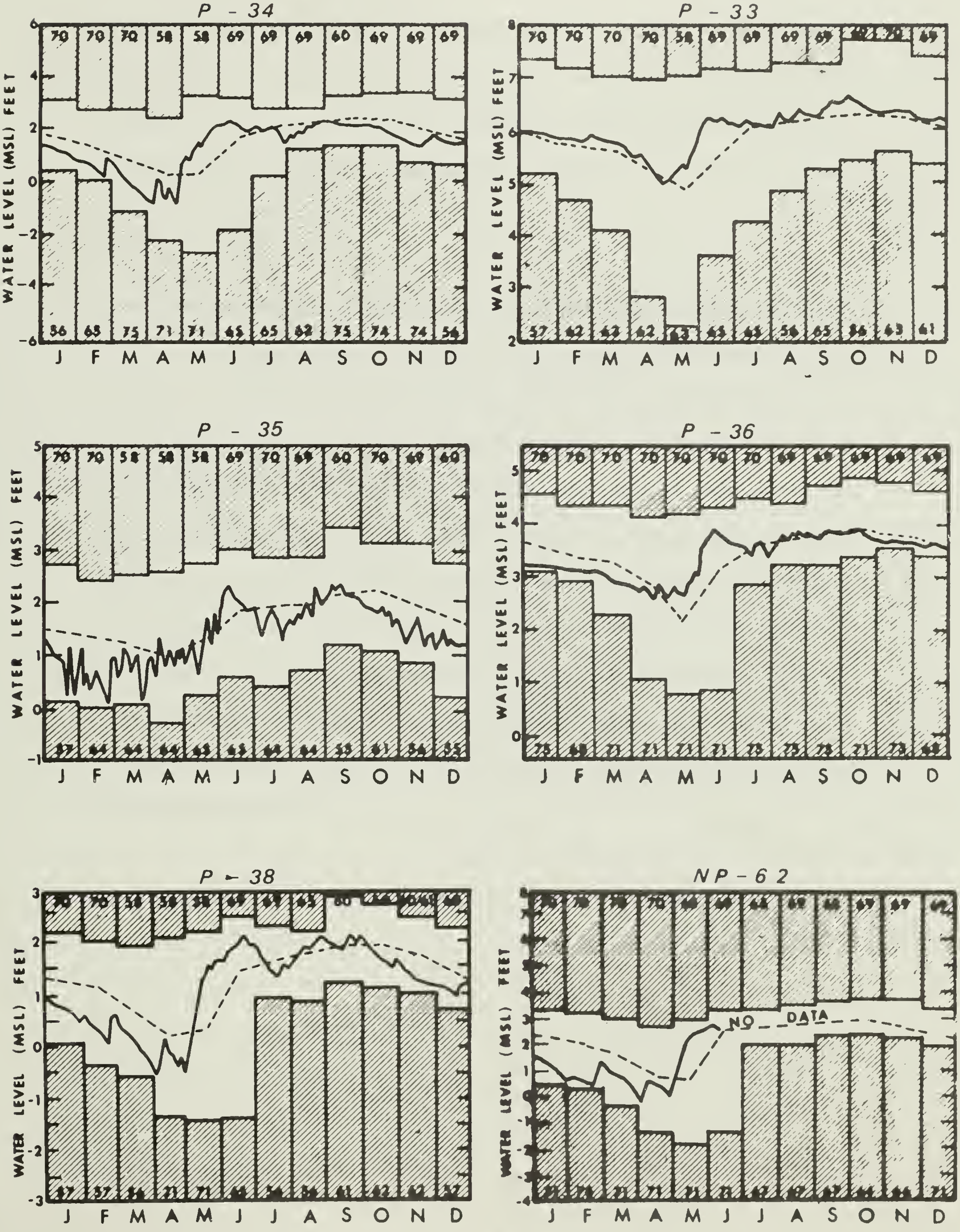


Figure 9: 1976 Hydrographs, Shark River Slough Monitoring Stations

occurred from mid-September to early October. During this time water levels became inflated due to greater than scheduled water deliveries through the control structures (combined with precipitation inputs). During the last two months in 1976 water levels at P-33 were very near normal conditions for this time of year.

The other stations (P-35, P-36, P-38 and NP-62) all had a similar response to the hydrologic inputs that P-33 had throughout the year (Fig. 9). However, contrary to P-33's greater than normal water levels at the beginning of the year, each of these stations were below normal. This trend continued until May when intense precipitation throughout the month increased water levels above the norm. Above average water levels at all stations continued through the month of June. During July and August, water levels approximated normal conditions as recession from higher June levels occurred in response to decreased precipitation. Throughout the remainder of 1976, all monitoring stations experienced lower than normal stages associated with the reduced rainfall amounts that were reported.

TAYLOR SLOUGH

The hydrologic regime of Taylor Slough has a very significant role in ecosystem maintenance in the eastern area of Everglades National Park. The highly diverse flora and fauna of the slough attracts many visitors annually to the Park. Alligators, herons and tropical hardwood hammocks have all responded to the hydrologic budget of the slough.

The overland sheet flow at the Taylort Slough Bridge normally begins when water levels reach a stage of 2.4 feet MSL (0.73 m) (Early, 1973). The flow is dissimilar to that of the Big Cypress and Everglades watersheds as the duration is much shorter.

In order to monitor the hydrologic conditions of the slough a monitoring program consisting of staff gages and recording stations was implemented. Presently, there are four primary hydrologic stations which are continuously monitored in the slough (Headquarters Pond, Taylor Slough at the Bridge, P-37 and NP-44) (Fig. 6).

During 1976, all stations in Taylor Slough reported water levels which were below normal throughout January and February (Fig. 10). Near the end of February precipitation inputs into the hydrologic budget of the Slough increased water levels at all stations. However, four of the stations continued to experience less than normal water levels and P-37 was the only station which achieved greater than normal conditions. From March

TAYLOR SLOUGH

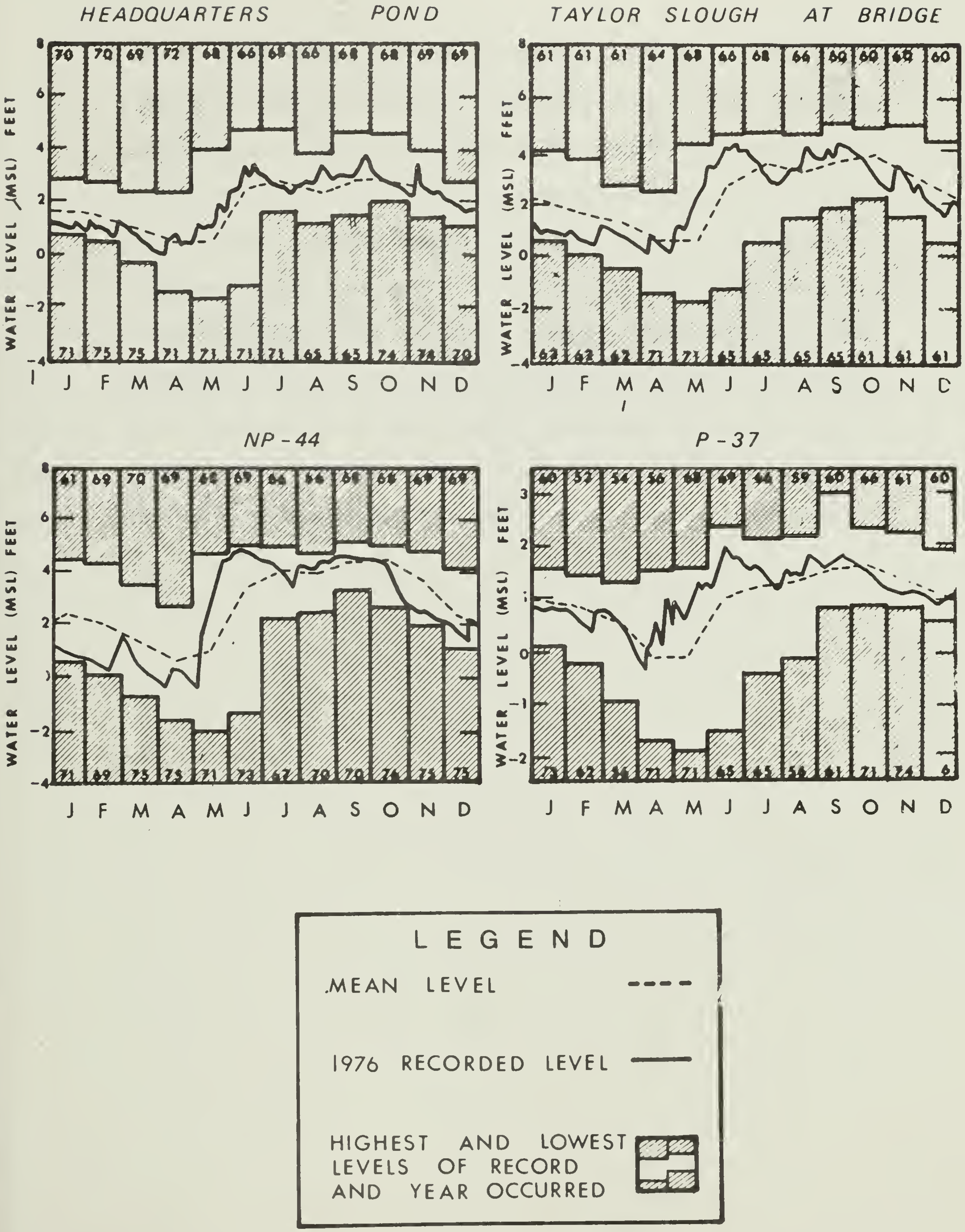


Figure 10: 1976 Hydrographs, Taylor Slough Monitoring Stations

through April, water levels at all stations continued to fluctuate in response to climatic conditions. During mid-May, intense rainstorms significantly increased water levels above normal and produced the greatest positive variance between recorded levels and the normally expected levels in Taylor Slough. However, precipitation at Royal Palm diminished in July causing water levels to once again drop below the normally expected stage. Again in August, greater than normal precipitation totals in the slough enabled the water levels to achieve greater than normal conditions. This trend continued at all stations in the slough through September. After the middle of October, most of the stations declined below the mean stage throughout the rest of the year.

The recently established Big Cypress National Preserve is an area where hydrologic field monitoring by National Park Service personnel is just commencing. The attributes of the watershed throughout the area are very similar to those within Everglades National Park. The gradients are low and the overland sheet flow is gradual. Erratic flows have been monitored throughout the years and much of the water eventually finds its way into the sloughs and ponds dispersed throughout the area. The Big Cypress watershed is a major contributor of fresh water supplied to Everglades National Park.

The U.S. Geological Survey has been operating gaging stations in the Big Cypress since 1939. During 1976, the following stations were monitored: Tamiami Canal Outlets: 40 Mile Bend to Monroe, Monroe to Carnestown, L30 to L67A, L67A to 40 Mile Bend; Tamiami Canal at Bridge 77 and Tamiami Canal at 40 Mile Bend (Fig. 11).

The hydrographs for each of these stations reported water conditions very similar to those experienced in Shark Slough and Taylor Slough (Fig. 12). Water levels were below normal during the first four months in 1976. Intense precipitation in May supplied sufficient amounts of water to increase the stage higher than was normally expected. During the remainder of the year water levels fluctuated in response to climatic conditions. Finally, at year's end, most stations were very near normal stage conditions.

WATER RESOURCES DATA FOR FLORIDA, 1975
Volume 2 Southern Florida

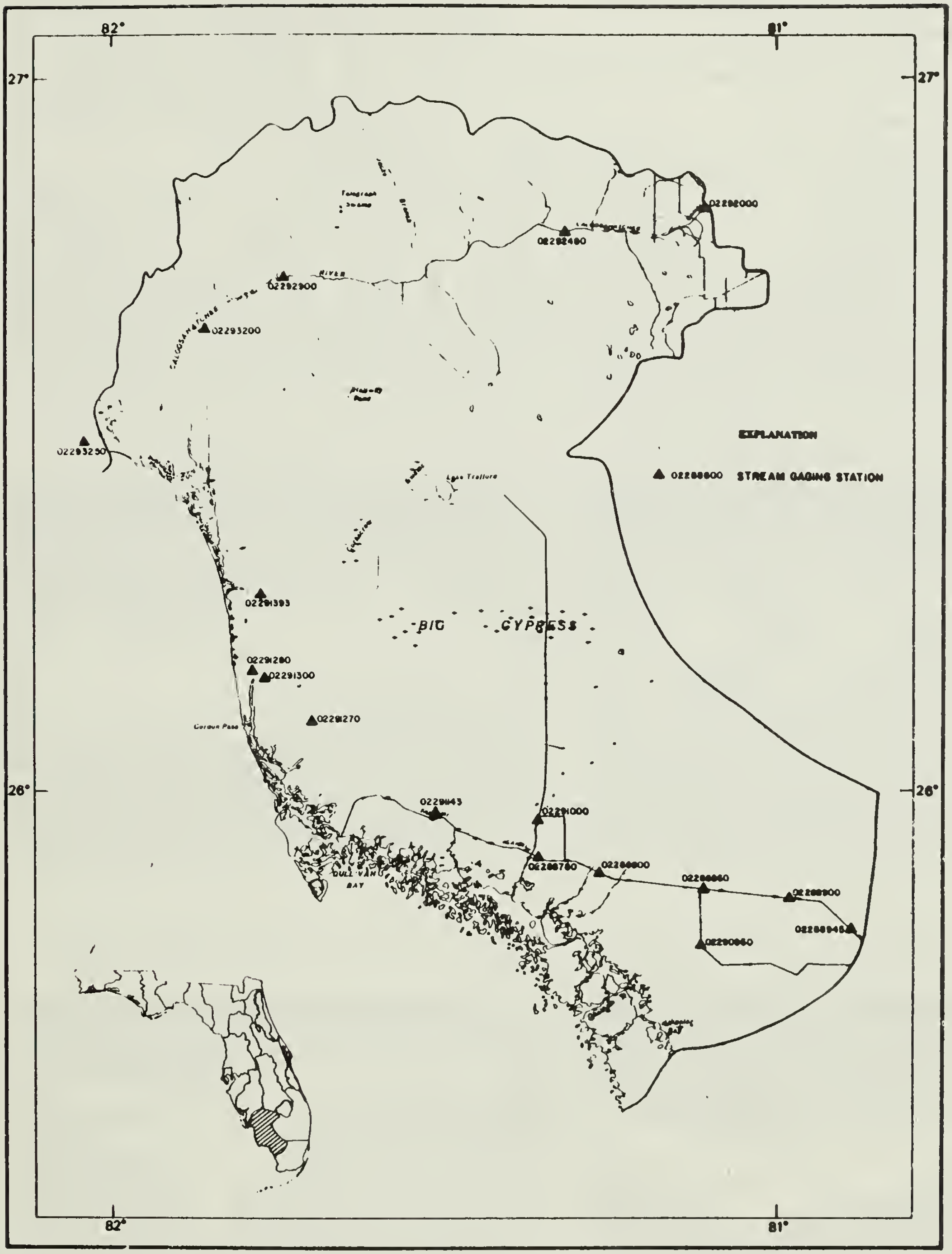
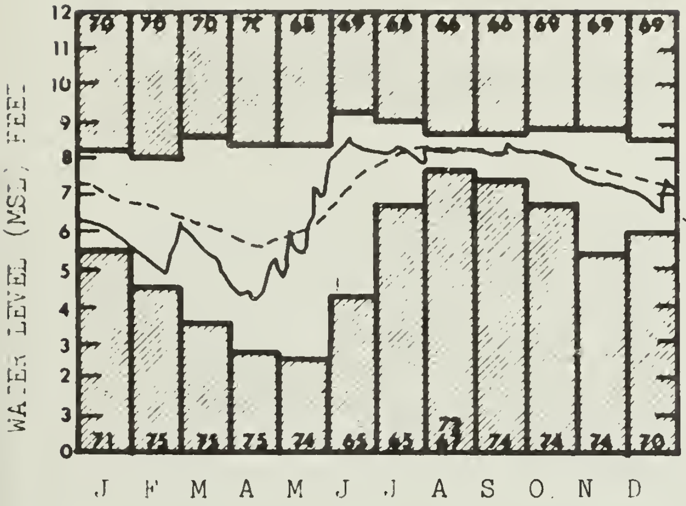
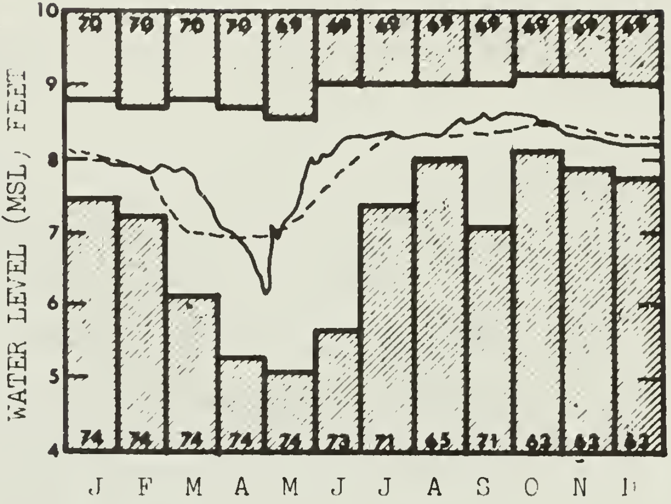


Figure II: Location of gaging Stations in the Big Cypress National Preserve (taken from U.S.G.S. Water Resources Data for Florida, Vol. II, 1975)

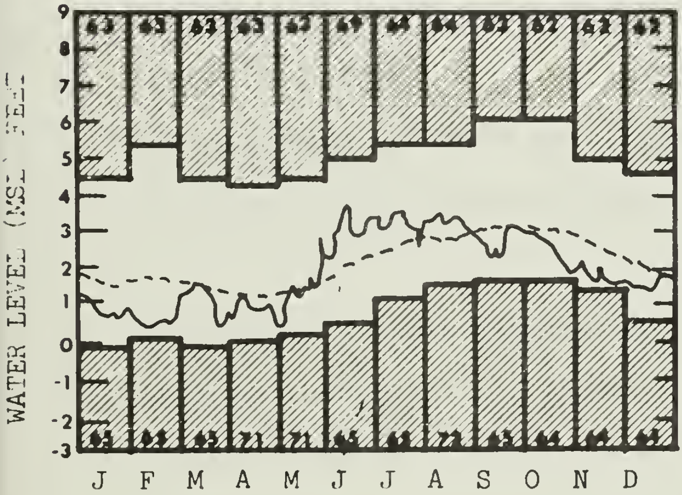
Tamiami Canal Outlets: 40 Mile Bend to Monroe



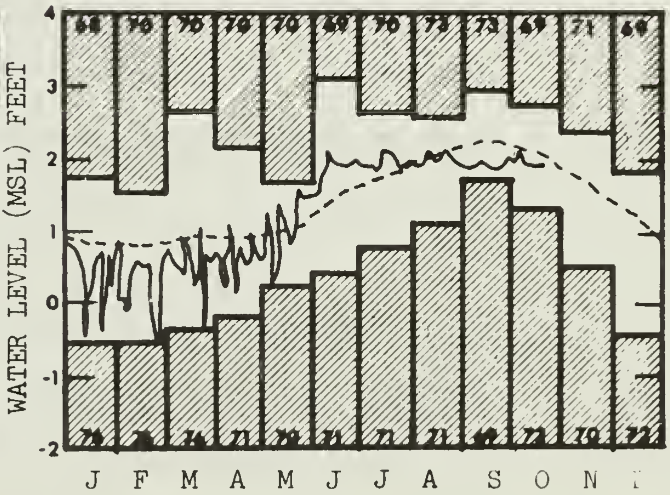
Tamiami Canal at 40 Mile Bend near Miami, Florida



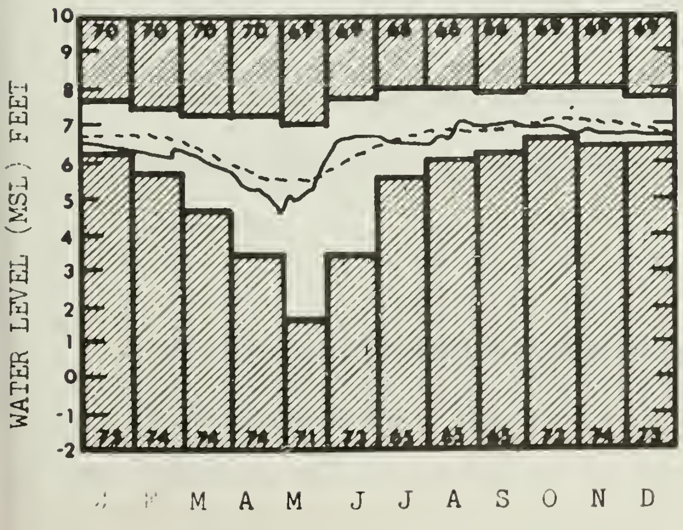
Tamiami Canal Outlets: Monroe to Carnestown



Tamiami Canal at Bridge 77 near Carnestown



Tamiami Canal Outlets: Levee 30 to Levee 67-A



Tamiami Canal Outlets: Levee 67-A to 40 Mile Bend

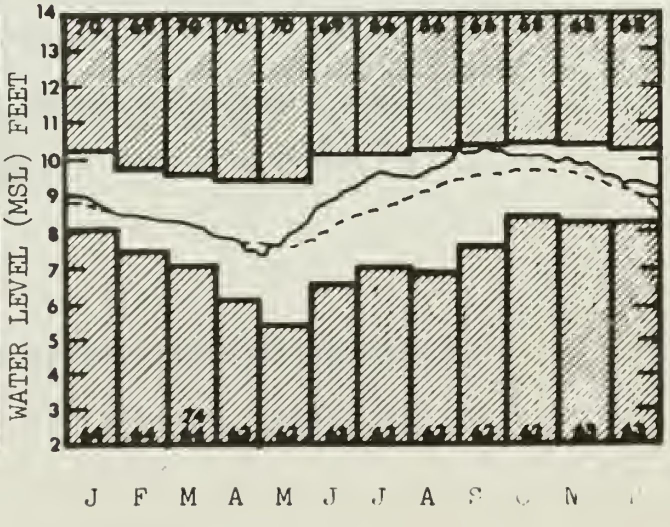


Figure 12: 1976 Hydrographs, Big Cypress Monitoring Stations

ERTS/LANDSAT TELEMETRY PROGRAM

Hydrologic data acquisition throughout remote regions of Everglades National Park up until recent years were difficult to obtain. The seasonality of surface water flow combined with the environmental complexities of South Florida were a hindrance to data collection. However, beginning in late 1974, Everglades National Park in cooperation with the U.S. Geological Survey undertook a new adventure in space technology by employing seven satellite telemetry stations to monitor hydrologic parameters. For the first time scientists were provided with the opportunity to receive, on a "real time" basis, daily hydrologic data from stations deep within the interior of the Park.

The satellite program implemented in the Park consisted of a ground hardware package of G.E. platforms which monitored two hydrologic parameters: water level and rainfall. The water levels were measured by a float driven recorder which digitized and encoded the data on tapes. Precipitation was monitored through the use of a standard receptacle which collected the rainfall and conveyed it through a mechanical tipping bucket. The bucket was electronically counted and through computations rainfall amounts were derived once the raw data were transmitted via satellite.

The entire ERTS/LANDSAT program is dependent upon "mutual visibility" by all components. That is, the G.E. field platform, satellite and the

receiver at the U.S.G.S., Water Resources Division, Miami, must all be aligned during an overflight to satisfy this criteria. Because of the earth's rotation combined with the sun sychronoous orbit of the ERTS/LANDSAT satellite, mutual visibility enabling a complete transmission of data does not occur on every orbit. However, when all criteria for mutual visibility have been satisfied, transmission of data from field station to U.S.G.S., Miami, can take place.

During each overflight of the ERTS/LANDSAT satellites there is a maximum time element in which transmission of data takes place. Above South Florida, due to its geographic location, mutual visibility can occur for a maximum of twelve minutes per each overflight. Since the G.E. field platform transmits data on a three minute cycle, it is therefore possible to receive a maximum of four completd transmissions each time conditions permit. However, due to tape sequence and satellite position, four complete transmissions are not always received because of timing elements which vary.

There were seven operational satellite hydrologic telemetry stations operating in Everglades National Park during 1976 (Fig. 13). The overall operational percentage for obtaining "real time" data from these stations was less than ideal. At some stations the evaluation of the hydrologic parameters being monitored was impossible.

An analysis of "real time" data retrieved from the satellite program revealed different operational levels throughout the year for each station.

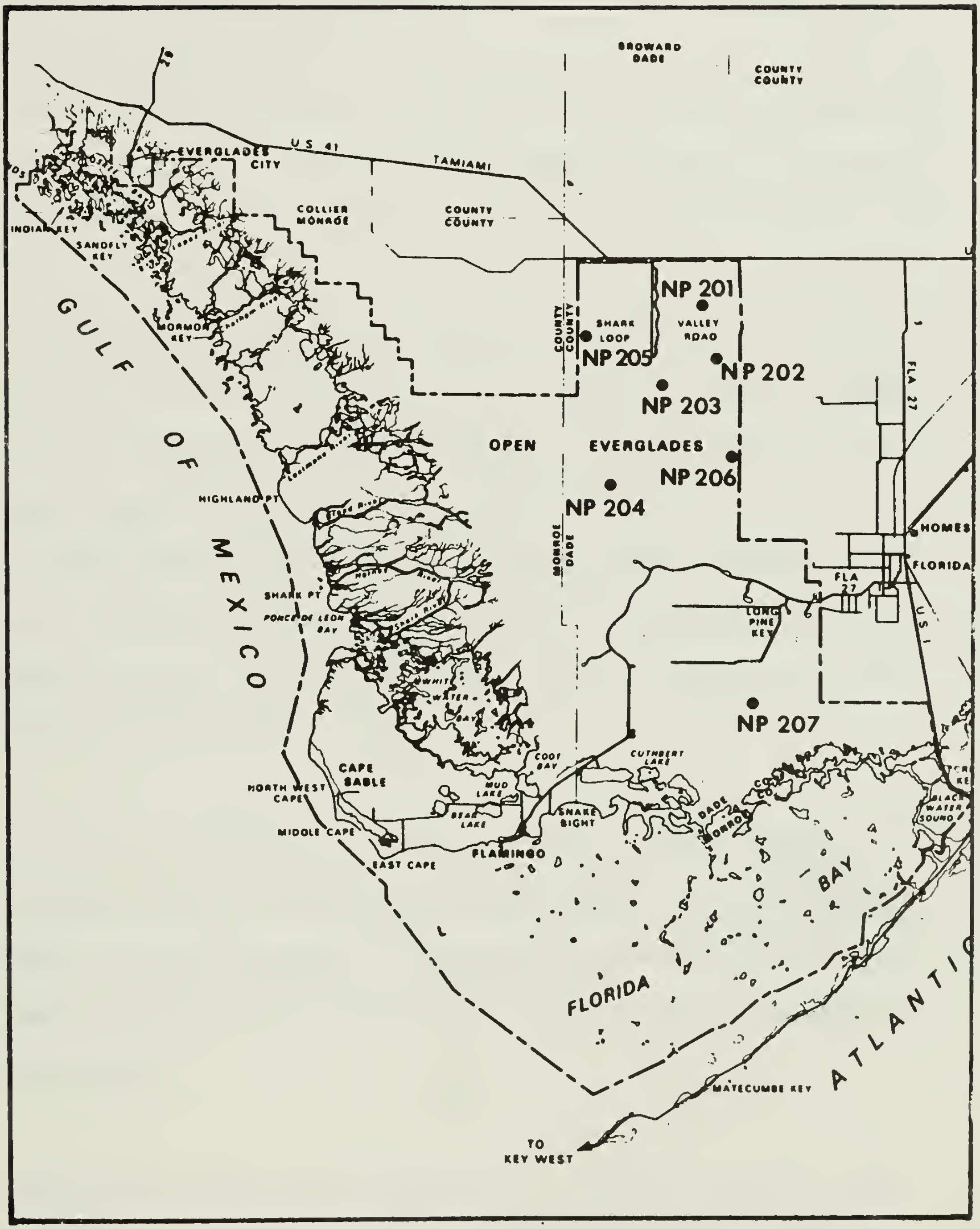


Figure 13: ERTS/LANDSAT Satellite Telemetry Stations, Everglades National Park

This can be attributed to the longevity and usefulness of the G.E. platforms utilized during the exploratory phase of this program. Later subsequent technological advances have increased the performance standards of these platforms and future evaluations of the ability to retrieve the data on a "real time" basis should help to determine the viability of future utilization of these satellite stations in Everglades National Park.

Operational percentages for all satellite stations in Everglades National Park were determined for 1976 (Tables 13, 14 and 15). These percentages were very similar for the two hydrologic parameters (water level and rainfall) examined at each specific location. The station with the best operational percentage was NP-201, transmitting data 80 percent of the time. Conversely, the most erratic station for transmitting data via the ERTS/LANDSAT program was station NP-207, sending data only 41.8 percent of the time.

It is important to note that even though rainfall "real time" data are not retrievable once lost in the system, each satellite platform does record water level data permanently. Therefore, even though on a "real time" basis the water level data could be lost, eventually this information will be retrieved.

Hydrographs based on data transmitted via satellite during 1976 were formulated. The hydrographs for water levels at most of the satellite

TABLE 13.

1976

OPERATION PERCENTAGES FOR SATELLITE STATIONS NP201-NP207

WATER LEVEL READINGS

Station	Total Days Operation in 1976	% Days Operation in 1976
201	294	80.3
202	289	80.0
203	214	58.5
204	290	79.2
205	254	69.4
206	192	52.5
207	153	41.8

Rainfall Readings

Station	Total Days Operation in 1976	% Days Operation in 1976
201	294	80.3
202	285	77.9
203	199	54.4
204	289	79.0
205	254	69.4
206	191	52.2
207	153	41.8

Table 14. 1976 Satellite Stations, Number of Days in Operation (By Month)

WATER LEVELS

	NP 201	NP 202	NP 203	NP 204	NP 205	NP 206	NP 207
Jan.	31	31	31	31	26	26	31
Feb.	29	29	0	29	25	0	0
Mar.	0	31	0	0	0	0	0
Apr.	30	30	20	10	30	30	20
May	20	31	31	26	10	10	20
Jun	30	25	20	30	20	24	10
Jul.	31	31	0	31	31	20	31
Aug.	31	5	0	31	15	0	0
Sept.	20	15	30	20	31	26	0
Oct.	31	15	31	21	15	20	16
Nov.	15	15	30	30	20	20	25
Dec.	26	31	21	31	31	16	0
Total	294	290	214	290	254	192	153

Table 15. 1976 Satellite Stations, Number of Days in Operation (by month)

RAINFALL

	NP 201	NP 202	NP 203	NP 204	NP 205	NP 206	NP 207
Jan.	31	31	31	31	26	26	31
Feb.	29	29	0	29	25	0	0
Mar.	0	31	0	0	0	0	0
Apr.	30	30	20	10	30	29	20
May	20	27	30	26	10	10	20
Jun.	30	25	20	29	20	24	10
Jul.	31	31	0	31	31	20	31
Aug.	31	5	0	31	15	0	0
Sept.	20	15	19	20	31	26	0
Oct.	31	15	28	21	15	20	16
Nov.	15	15	30	30	20	20	25
Dec.	26	31	21	31	31	16	0
Total	294	285	199	289	254	191	153

stations were at or above the normal levels (Fig. 14). However, reservation must be made regarding an analysis of these hydrographs at this time since the oldest period of record for any of these stations dates back to only October of 1974.

ERTS / LANDSAT STATIONS

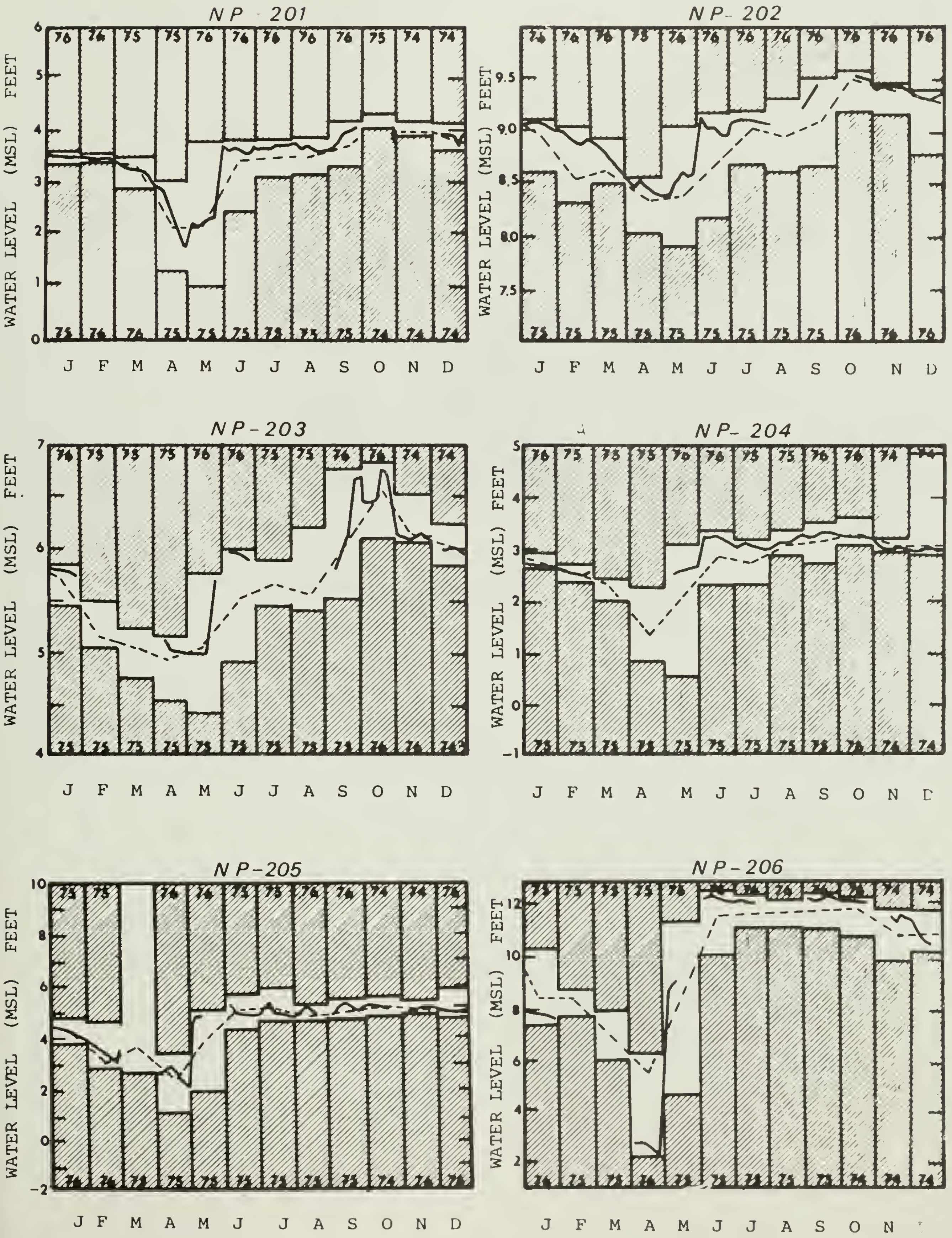


Figure 14: 1976 Hydrographs, ERTS/LANDSAT Satellite Stations

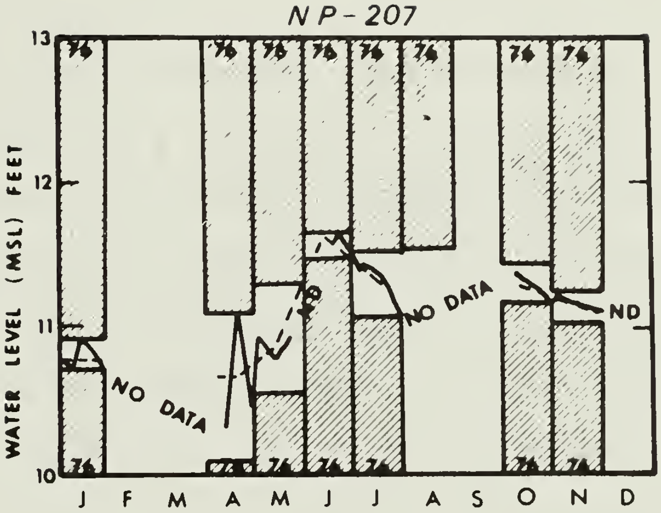


Figure 14: (continued)

IV. S-12 WATER DELIVERIES TO EVERGLADES NATIONAL PARK

Past development in South Florida has altered the natural overland sheet flow of water into Everglades National Park. With the completion of the Tamiami Trail (U.S. 41), combined with the development of flood control projects, natural sheet flow no longer exists continuously from Lake Okeechobee to Florida Bay. To assist in the delivery of water to the Park after the erection of levees that eliminated this flow, four control structures (S-12 A, S-12 B, S-12 C, and S-12 D) were constructed at three mile intervals along the Tamiami Trail. Each of these structures has six gates which are independently operated to release water into the panhandle section of the Park. Under normal circumstances most of the water delivered into the Park is released through structure S-12 C, providing inputs directly into the Shark River Slough. The other structures are manipulated to facilitate scheduled deliveries by the Corps of Engineers with S-12 B of secondary importance, S-12 A tertiary importance and S-12 D is very rarely opened.

The amount of water released to Everglades National Park is in accordance with Public Law 91-282 enacted by the U.S. Congress in 1970, authorizing the amount of minimum water delivered into the Park. One of the provisions of the law provided for the minimum delivery of 260,000 acre feet (320.58 hm^3) of water per annum to the Park through the Tamiami structures on a monthly schedule (Table 16). There is no guarantee that this allotment of water will be available each year.

Table 16. S-12 SCHEDULED WATER DELIVERIES TO EVERGLADES NATIONAL PARK

Month	Volume-Acre Feet
January	22,000
February	9,000
March	4,000
April	1,700
May	1,700
June	5,000
July	7,000
August	12,000
September	39,000
October	62,000
November	59,000
December	32,000
Total	260,000

However, hydrologic investigations have determined that sufficient water should be available to meet this schedule during most years.

The minimum water delivery schedule for Everglades National Park was determined through the utilization of historic hydrologic records. The resulting schedule was developed to approximate natural overland sheet flow in accordance with seasonal fluctuation into the Shark River Slough throughout recent historic times in accordance with seasonal variations.

In order to meet the requirements of the monthly water delivery schedule, a 10-day release schedule was developed. The delivery rates were determined by stage-discharge relationships between flows measured through the Tamiami Canal Outlets and P-33. Average water levels for the slough were determined using mean gage heights at P-33 and thereby computing monthly stage duration curves. Therefore, the 10-day schedule evolved from a hydrographic interpolation. The resulting calculations developed a schedule of flows from 15 cfs (0.42 m^3/s) to a maximum 1040 cfs (29.45 m^3/s) per 10-day period (Table 17).

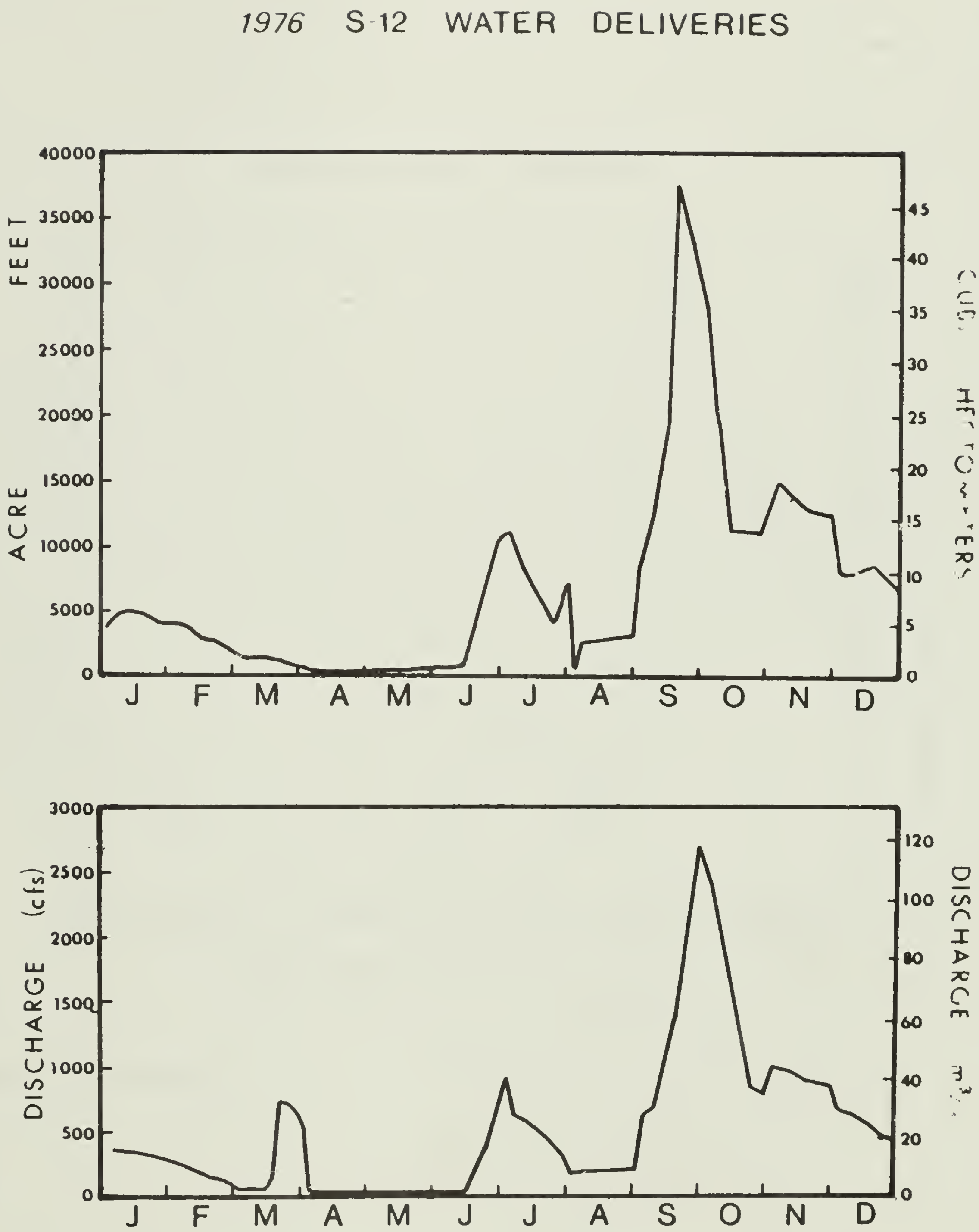
During 1976 Everglades National Park received a total of 350,700 acre feet (432.41 hm^3) of water delivered through the control structures (Table 18). This allotment was 141 percent of the minimum required delivery by law. The accumulated monthly releases were very close to regulation during the months from January through May (Fig. 15). For the rest of the year (June - December) water delivered into the Park was at

Table 17. Schedule of Releases from Conservation Area No. 3 to Everglades National Park (10-Day Release Schedule)

Month	10-Day Period	Scheduled Releases (cfs)	Month	10-Day Period	Scheduled Releases (cfs)
Jan.	11-10	390	July	10-19	120
	11-20	350		20-29	130
	21-30	290		30-8	150
	31-9	210	August	9-18	180
Feb.	10-19	160		19-28	220
	20-1	110		29-7	320
March	2-11	90	Sept.	8-17	540
	12-21	65		18-27	820
	22-31	45		28-7	1020
April	1-10	30	Oct.	8-17	1040
	11-20	25		18-27	1010
	21-30	15		28-6	1000
May	1-10	15	Nov.	7-16	980
	11-20	20		17-26	880
	21-30	25		27-5	750
	31-9	50	Dec.	6-15	640
June	10-19	75		16-25	440
	20-29	90		26-31	400
	30-9	110			

Table 18. 1976 S-12 (A through D) Water Deliveries, Everglades National Park

Month	Scheduled Deliveries Acre Feet	Estimated Deliveries Acre Feet	% Month	Year Total Scheduled	Est.	% of Accumulated Schedule Recd.
Jan.	22,000	21,380	97.2	22,000	21,380	97.2
Feb.	9,000	9,596	106.6	31,000	30,976	100
Mar.	4,000	4,931	123.3	35,000	35,907	103
Apr.	1,700	2,043	120.2	36,700	37,950	103
May	1,700	2,600	152.9	38,400	40,550	106
Jun.	5,000	20,200	404	43,400	60,750	140
July	7,000	30,867	417	50,800	916,170	180
Aug.	12,000	11,840	97	63,000	103,457	164
Sept.	39,000	99,700	255.6	102,000	203,157	199
Oct.	62,000	74,000	110.4	169,000	277,157	164
Nov.	59,000	55,300	93.7	228,000	332,457	146
Dec.	32,000	33,900	105.9	260,000	366,357	141
Total	260,000	350,700		260,000	366,357	+419



1976 S-12 WATER DELIVERIES

Figure 15: 1976 S-12 Discharge into Everglades National Park

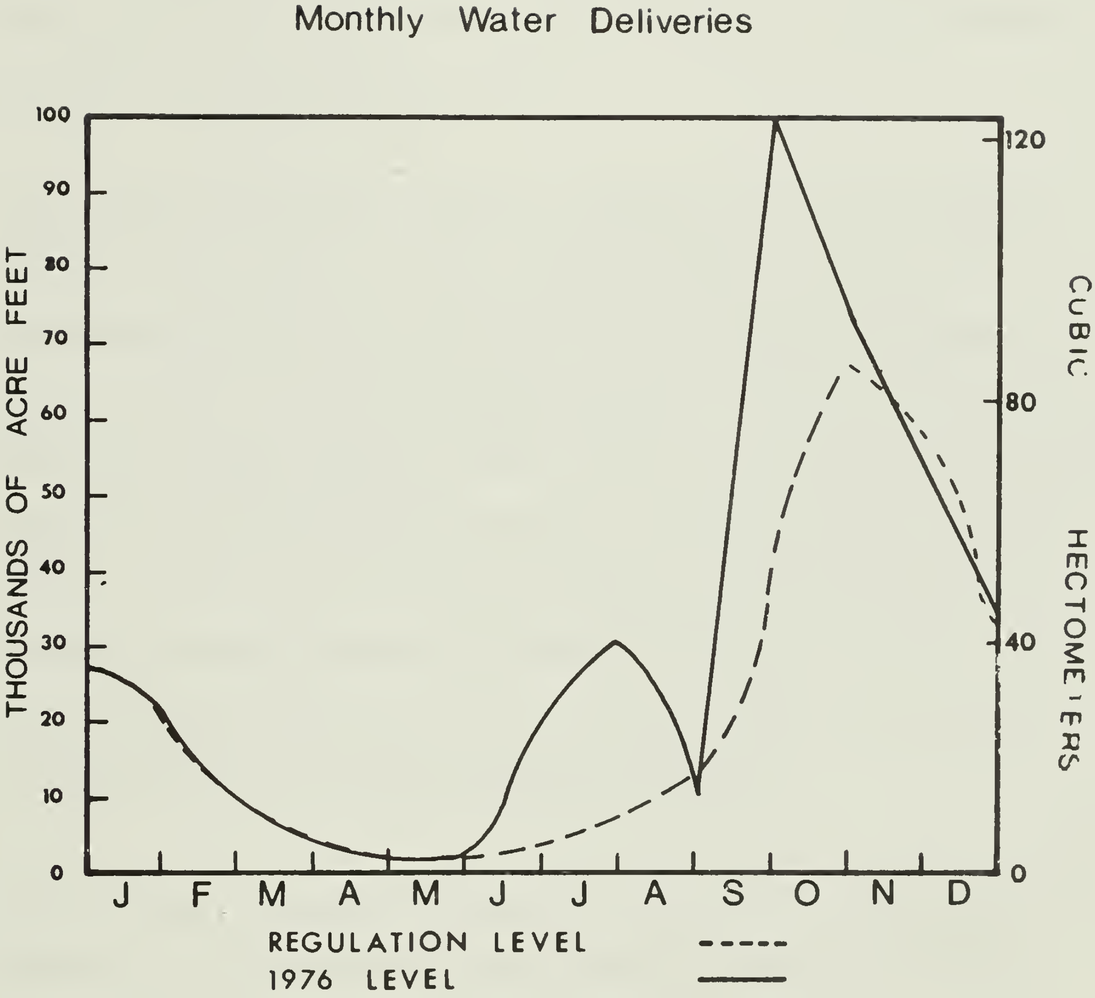


Figure 15: (Continued)

least 140 percent or greater than the required minimum accumulated schedule. The month in which the greatest variance between minimum accumulated scheduled release and the actual amount was in September. During this month, the Park received 199 percent of the scheduled minimum accumulated amount of water.

On a weekly comparison, scheduled deliveries to the Park reached a maximum of 37,500 acre feet (46.24 hm^3) from September 21 to September 27. During this period of time S-12 A had six gates opened to 0.6 feet (0.18 m), S-12 B with six gates opened to 2.5 feet (0.76 m) and S-12 C with six gates opened to 3.0 feet (0.91 m). Conversely the minimum amount of water which was delivered to the Park occurred in April. Between April 13 and April 26, only 280 acre feet (0.345 hm^3) were released each week through the structures. Both S-12 B and S-12 C had one gate opened at one foot (0.30 m) during this period of time to permit this allotment of water to pass into the Park (Table 19).

The only other significant development concerning the water delivery schedule during 1976 was the release of excess water into the Park during June and September. During June, water levels in Conservation Area 3A rose above regulation storage levels. The excess waters, as required, were transferred into the Park. Again, in August similar conditions prevailed in Conservation Area 3A. However, due to requests by National Park Service personnel, the excess waters were not delivered to the Park until September due to alligator nests below the structures.

Table 19. 1976 S-12 Discharge to Everglades National Park

DATE - to -		Q cfs	Volume A.F.	Weekly Total Vol (AF)	S-12-A		S-12-B		S-12-C		S-12-D	
					GATES OPEN	FEET OPENED	GATES OPEN	FEET OPENED	GATES OPEN	FEET OPENED	GATES OPEN	FEET OPENED
1/1	1/5	394	3940	3940	c*	c	1	0.4	4	0.7	c	c
1/6	1/12	380	5320	9260	c	c	1	0.4	4	0.7	c	c
1/13	1/19	354	4956	14050	c	c	1	0.4	4	0.7	c	c
1/20	1/26	315	4404	18410	c	c	1	0.4	4	0.7	c	c
1/27	2/2	297	4160	22570	c	c	1	0.4	4	0.7	c	c
2/3	2/9	213	2962	25770	c	c	1	0.4	2	0.7	c	c
2/10	2/17	175	2800	28570	c	c	1	0.4	2	0.7	c	c
2/18	2/23	125	1750	29954	c	c	1	0.4	1	0.7	c	c
2/24	3/1	105	1470	31230	c	c	1	0.4	1	0.7	c	c
3/2	3/8	110	1540	33000	c	c	1	0.4	1	0.7	c	c
3/9	3/15	102	1428	34500	c	c	1	0.3	1	0.3	c	c
3/16	3/22	53	742	35337	c	c	1	0.3	1	0.3	c	c
3/23	3/29	50	700	35950	c	c	1	0.3	1	0.3	c	c
3/30	4/5	41	574	36360	c	c	1	0.3	1	0.3	c	c
4/6	4/12	28	392	36913	c	c	1	1.0	1	0.3	c	c
4/13	4/19	20	280	37193	c	c	1	1.0	1	1.0	c	c
4/20	4/26	20	280	37470	c	c	1	1.0	1	1.0	c	c
4/27	5/3	35	490	38400	c	c	1	1.0	1	1.0	c	c
5/4	5/10	35	490	39000	c	c	1	1.0	1	1.0	c	c
5/11	5/17	50	700	39700	c	c	1	0.2	1	0.2	c	c
5/18	5/24	45	630	40200	c	c	1	0.2	1	0.2	c	c
5/25	6/1	45	720	40930	c	c	1	0.2	1	0.2	c	c
6/2	6/7	55	660	42030	c	c	1	0.2	1	0.2	c	c
6/8	6/14	65	910	42950	c	c	1	0.2	1	0.2	c	c
6/15	6/21	360	5040	48,000	1	1.0	1	1.0	1	1.0	c	c
6/22	6/28	750	10,400	58400	2	1.0	2	1.0	3	1.0	c	c
7/1	7/6	925	11,100	72455	2	1.0	2	1.0	3	1.0	c	c
7/6	7/12	610	8540	79256	1	1.0	1	1.0	1	1.0	c	c
7/13	7/19	525	7350	86500	1	1.0	1	1.0	1	1.0	c	c
7/20	7/26	317	4440	90940	1	0.6	1	0.5	c	c	c	c
7/27	8/2	170	2380	93320	1	0.5	1	0.5	c	c	c	c
8/3	8/9	195	2730	95780	1	0.5	1	0.5	c	c	c	c

*C = CLOSED

Table 19 (continued).

DATE - to -		Q cfs	Volume AF	Weekly Total Vol (AF)	S-12-A		S-12-B		S-12-C		S-12-D	
					GATES OPEN	FEET OPENED	GATES OPEN	FEET OPENED	GATES OPEN	FEET OPENED	GATES OPEN	FEET OPENED
8/10	8/16	195	2730	98470	1	0.5	1	0.5	C	C	C	C
8/17	8/23	200	2800	101300	1	0.5	1	0.5	C	C	C	C
8/24	8/30	215	3010	104340	1	0.5	1	0.5	C	C	C	C
9/1	9/7	620	8680	112473	1	0.5	1	0.5	2	1.0	C	C
9/8	9/13	900	12600	123,280	1	0.5	3	0.5	3	1.2	C	C
9/14	9/20	1400	19600	142880	2	0.5	3	1.1	6	1.1	C	C
9/21	9/27	2700	37500	181,900	6	0.6	6	2.5	6	3.0	C	C
9/28	10/4	2400	33600	203900	6	0.6	6	2.5	6	3.0	C	C
10/5	10/12	1800	28800	232700	1	0.5	2	0.8	3	0.9	C	C
10/13	10/18	800	11200	237500	1	0.5	2	0.8	3	2.7	C	C
10/19	10/26	775	11625	249000	1	0.5	2	0.8	3	2.7	C	C
10/27	11/1	820	11480	261620	1	0.5	2	0.8	3	0.9	C	C
11/2	11/8	1080	15000	287600	6	0.5	2	0.8	2	1.0	C	C
11/9	11/15	970	13580	291400	6	0.5	2	0.8	2	1.0	C	C
11/16	11/22	915	12810	294550	6	0.5	2	0.8	2	1.0	C	C
11/23	11/29	870	12180	317480	6	0.5	2	0.8	2	1.0	C	C
11/30	12/6	680	8160	325492	1	0.3	2	0.8	3	1.0	C	C
12/7	12/13	625	8750	333650	1	0.3	2	0.8	3	1.0	C	C
12/14	12/20	575	8050	N.A.	1	0.3	2	0.8	3	1.0	C	C
12/21	12/27	486	6740	339270	C	C	2	0.6	3	0.8	C	C

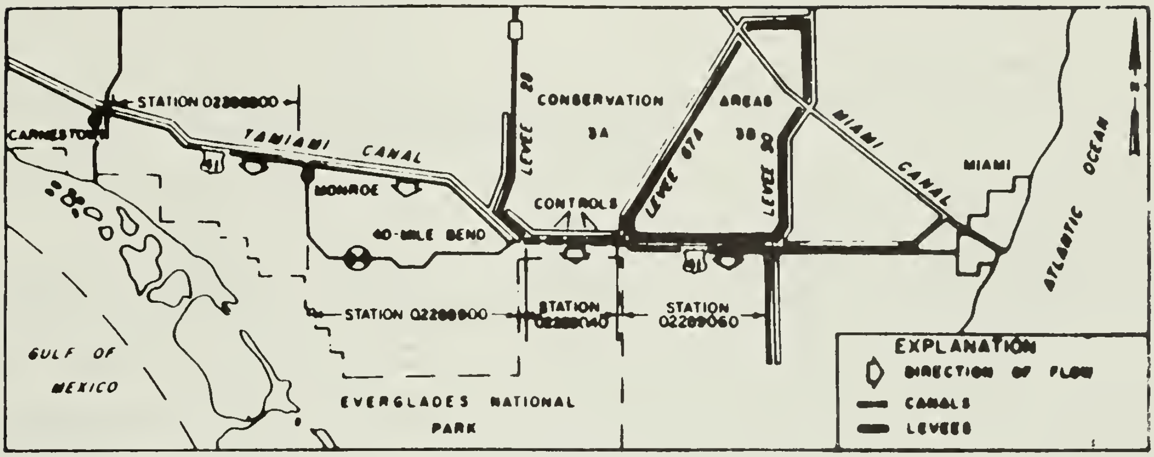
V. DISCHARGE

Discharge computations throughout Everglades National Park and the Big Cypress National Preserve are complex and difficult to determine. Low velocities associated with flat gradients, complicated by aquatic plants and control structure regulations have necessitated the formulation of empirical relationships to determine the discharge. The relationships between discharge and stage were determined by the U.S. Geological Survey enabling discharge rates to be established for the monitoring areas.

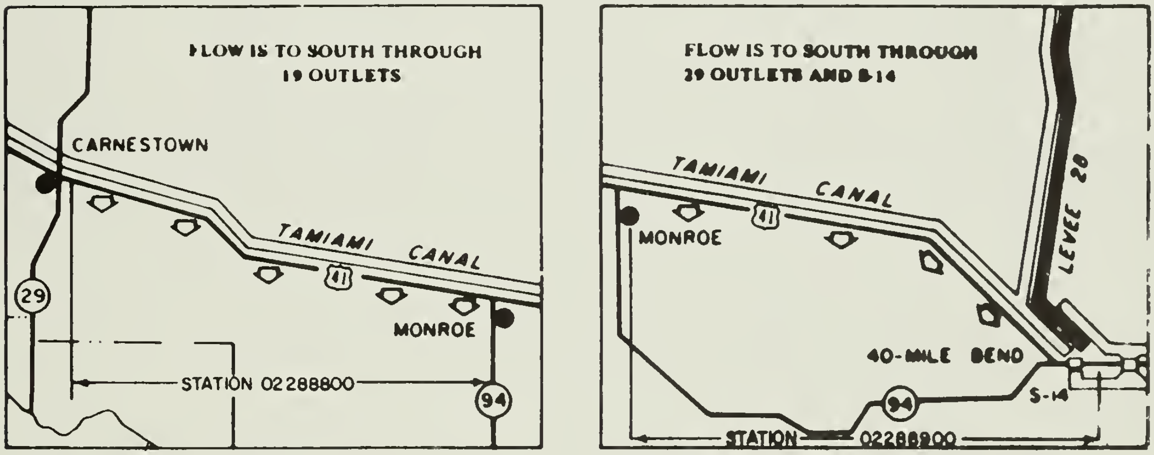
There are five monitoring locations which provide discharge data for Everglades National Park and the Big Cypress National Preserve. Four of these areas are associated with the Tamiami Canal OUtlets which run parallel to U.S. Highway 41 (Tamiami Trail) (Fig. 16). The other location is in the Taylor Slough region near the Everglades National Park Headquarters.

During 1976, accumulated mean discharge rates for Everglades National Park and Big Cypress were below normal. Both of these areas experience only 74 percent of the normally expected daily mean discharge throughout the year (Table 20). Accumulated mean daily discharge totals at the monitoring locations were deficit by 438.2 cfs (12.41 m^3/s). By year's end, the accumulated mean daily discharge for all stations combined was 1233.9 cfs (34.94 m^3/s) or 797.72 million gallons per day (3019.37 million liters per day).

TAMIAMI CANAL OUTLETS

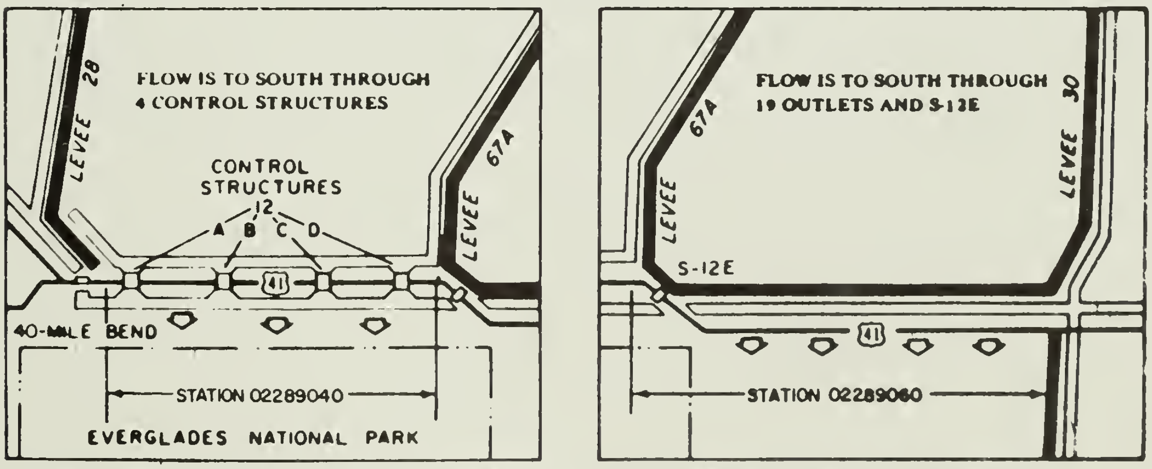


LOCATION



STATION 02288800 MONROE TO CARNESTOWN

STATION 02288900 40-MILE BEND TO MONROE



STATION 02289040 LEVEE 67-A TO 40-MILE BEND

STATION 02289060 LEVEE 30 TO LEVEE 67-A

Figure 16: Tamiami Canal Outlets, Monitoring Locations (Taken from U.S.G.S. Water Resources Data for Florida, Vol. II, 1975)

Table 20. Summary of Discharge Data for Everglades National Park-Big Cypress Stations for the 1976 year.

Station	cfs Max Daily	cfs Min Daily	No. Days of 0 Flow	Mean (cfs) Daily	Avg. for Period of Record (cfs) Daily
Taylor Slough	281	0	176	43.9	33.1
40 Mile Bend to Monroe	1,110	0	68	225	241
67A to 40	3,590	20	0	488	877
30 to 67	305	0	39	75	118
Monroe to C	1,770	0	19	402	403

The area experiencing the greatest continuous discharge during 1976 was at the Tamiami Canal outlets: L67A to 40 Mile Bend (Table 21). This station is responsible for monitoring water which flows into the Shark River Slough just below the control structures. The maximum daily discharge monitored at this location during 1976 was 3590 cfs (101.67 m^3/s). There were no days of zero flow and the minimum daily discharge was 20 cfs (0.56 m^3/s). The flow duration curve for this station illustrates the percentage of time during which discharge equaled or exceeded the flow depicted during the year (Fig. 17). Nearly 50 percent of the time flow equaled or exceeded 375 cfs (10.62 m^3/s) or 242 million gallons per day (915.97 million liters per day) at this station.

Throughout all months in 1976 the Tamiami Canal outlets: L67A to 40 Mile Bend monitored deficit discharge values (Table 21). The greatest deviation from the mean occurred in April when this location received only six percent of the normally expected monthly flow. Discharge rates most nearly approximated the norm during the months of September and October when the flow reached 96 and 94 percent (respectively) of the normally expected rates.

The discharge values for the area east of and adjacent to the panhandle section of Everglades National Park were measured by the Tamiami Canal outlets: L30 to L67A. This station, likewise, reported flow rates far below the mean. During 1976, only 63 percent of the daily median flow was reported at this location. The mean daily discharge deviated by -43 cfs (-1.22 m^3/s) from the average value and experienced a maximum

Table 21. 1976 Discharge Tamiami Canal Outlets L67A to 40 Mile Bend

Month	Total Mean Discharge	1976 Mean Discharge	% Discharge 1976
Jan.	517	349	68
Feb.	497	165	33
Mar.	553	80.4	15
Apr.	551	34.3	6
May	171	49.5	29
Jun.	918	332	36
Jul.	1,248	502	40
Aug.	1,199	192	16
Sept.	1,467	1,401	96
Oct.	1,308	1,232	94
Nov.	1,258	935	74
Dec.	837	588	70
Total	10,524	5,860.2	56%

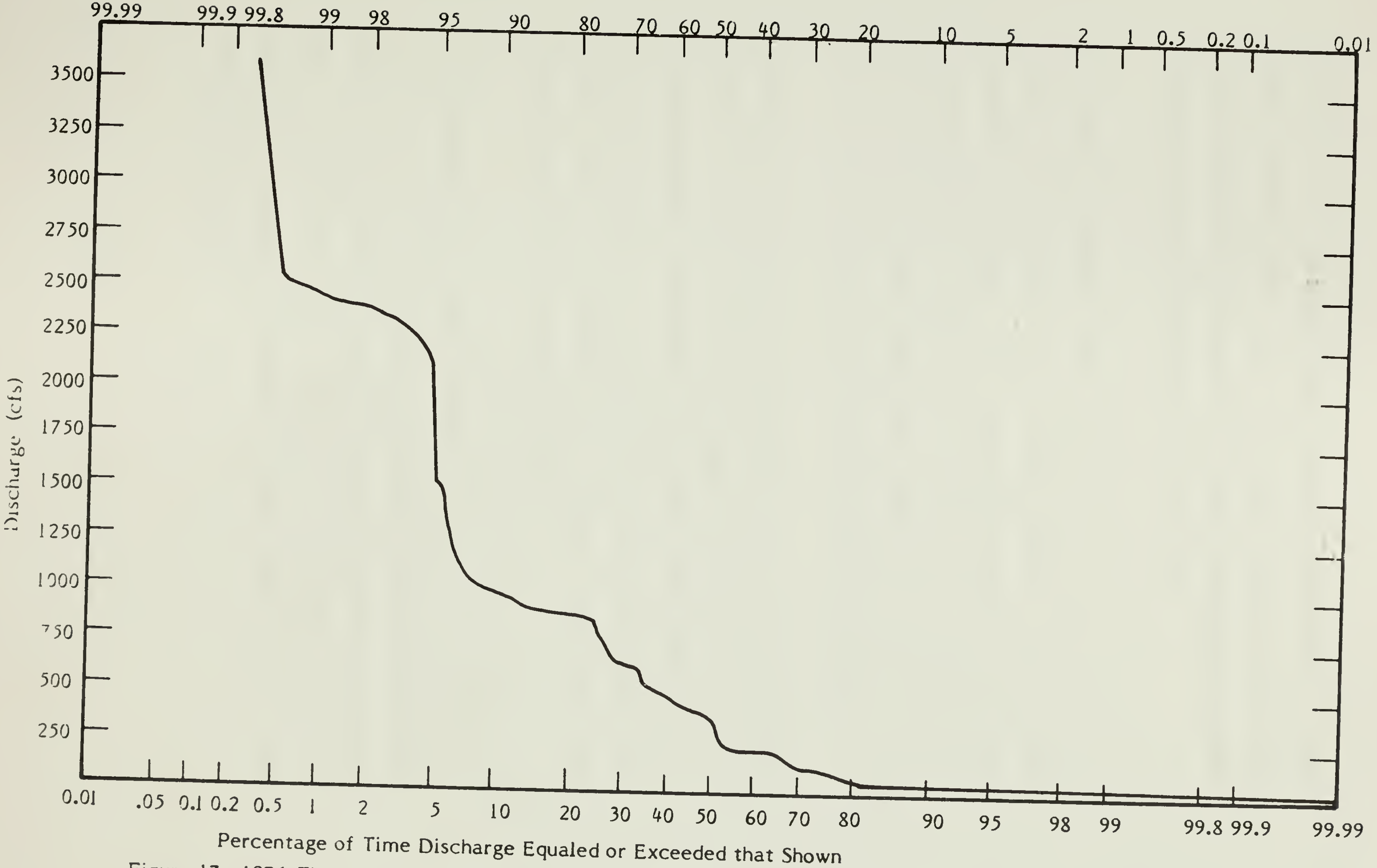


Figure 17: 1976 Flow Duration Curve, Tamiami Canal Outlets, L67-A to 40 Mile Bend

daily rate of 305 cfs (8.64 m^3/s) and a mimimum value of zero cfs during 39 days in 1976 (Table 22). The flow duration curve for 1976 at this station indicated that 50 percent of the time the discharge exceeded or equaled 73 cfs (2.07 m^3/s) throughout the year (Fig. 18).

The greatest discharge values during the 1976 calendar year at the Tamiami Canal Outlets: L30 to L67A occurred in June, August, September and October. The monthly mean exceeded the normally expected discharge at least 100 percent (119%, 145%, 164% and 100%, respectively) of the time during these months. Conversely, flow rates were the lowest during February (3 percent) and April (1.3 percent).

Discharge rates for the area immediately to the west of Everglades National Park and in the Big Cypress National Preserve were very close to normal during 1976. The Tamiami Canal Outlets: 40 Mile Bend to Monroe experienced 93 percent of the normal flow. Likewise, the Tamiami Canal Outlets, Monroe to Carnestown, also reported normal flow rates, experiencing 99.8 percent of the yearly mean.

At the 40 Mile Bend to Monroe Station, the mean daily discharge value was 225 cfs (6.37 m^3/s) (Table 23). The maximum daily discharge through this area reached 1110 cfs (31.44 m^3/s) during 1976 and 69 days reported no flow. Throughout the year, over 50 percent of the time the flow was determined to be equal to or in excess of 50 cfs (1.42 m^3/s) on the flow duration curve (Fig. 19).

Table 22. 1976 Discharge Tamiami Canal Outlets
L30 to L67A

Month	Total Mean Discharge	1976 Mean Discharge	% Discharge 1976
Jan.	69	15.8	23
Feb.	458	12.6	3
Mar.	42	13.6	32
Apr.	30	0.38	1.3
May	44	24.2	55
Jun.	79	93.8	119
Jul.	99	73.3	74
Aug.	112	162	145
Sept.	120	197	164
Oct.	145	146	100
Nov.	130	105	81
Dec.	88	52.1	59
Total	1,416	895.78	63%

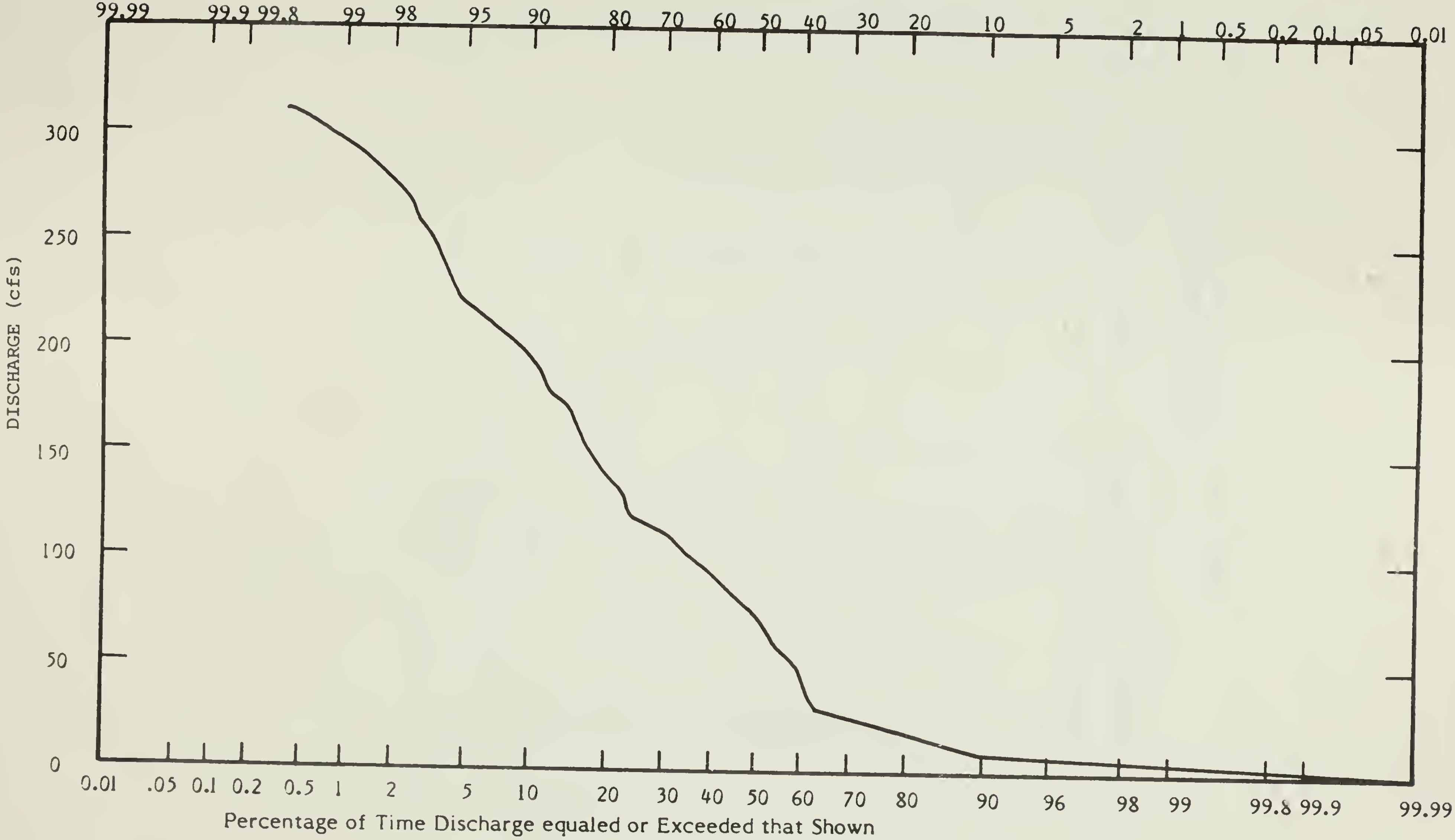


Figure 18: 1976 Flow Duration Curve, Levee 30 to Levee 67A

Table 23. 1976 Discharge Tamiami Canal Outlets
40 Mile Bend to Monroe

Month	Total Mean Discharge	1976 Mean Discharge	% Discharge 1976
Jan.	52	12.8	25
Feb.	49	4.26	8.7
Mar.	17	3.20	18.8
Apr.	36	0	0.00
May	79	1.12	1.4
Jun.	258	563	218
Jul.	555	295	53
Aug.	566	493	87
Sept.	545	796	146
Oct.	432	439	102
Nov.	213	51	24
Dec.	86	36.9	43
Total	2,888	2,695.28	93%

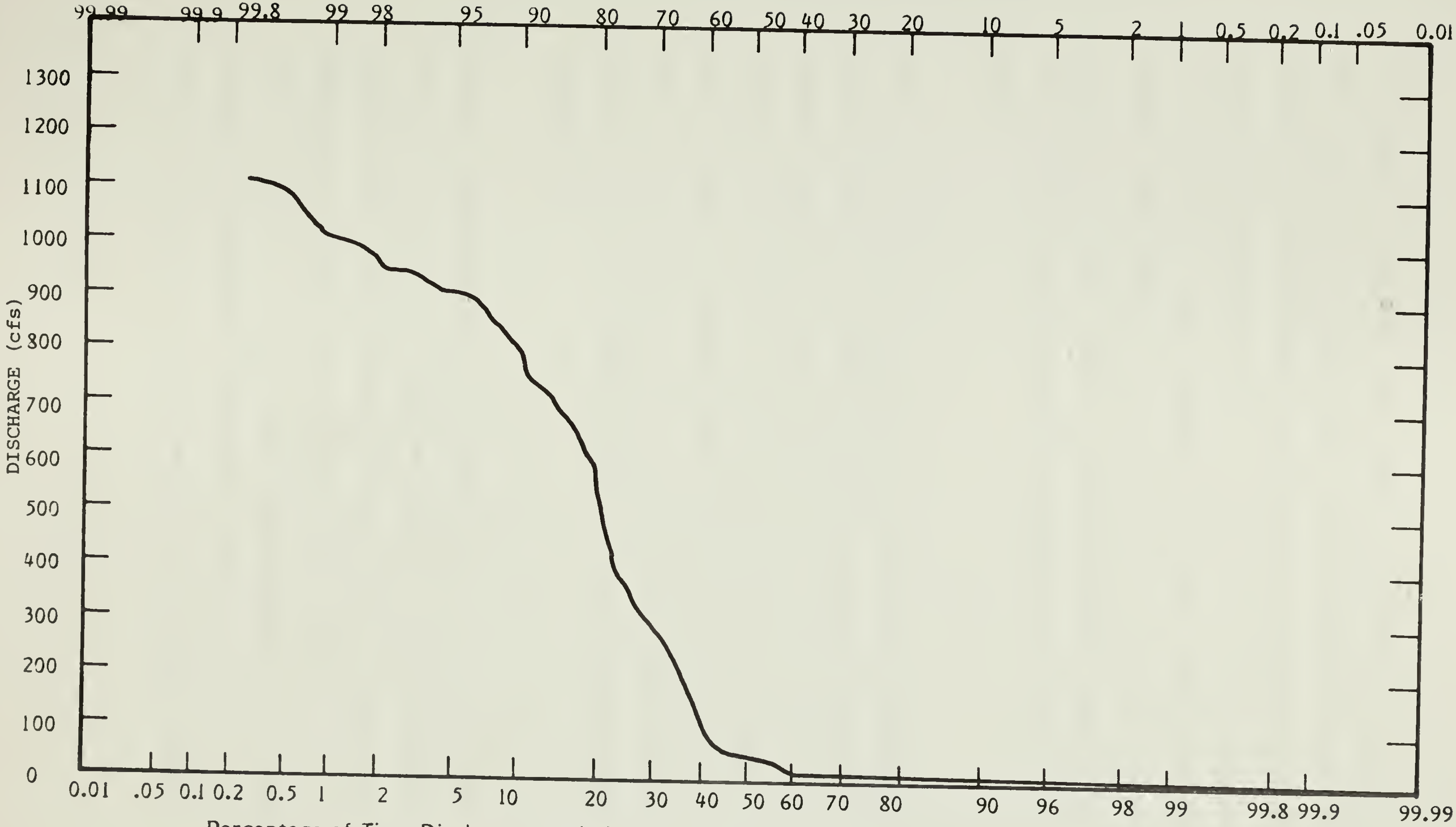


Figure 19: 1976 Flow Duration Curve, 40 Mile Bend to Monroe

The Monroe to Carnestown area reported normal discharge values for 1976, experiencing a discharge rate of 402 mean daily cfs (11.38 m^3/s) (Table 20). Excessive discharge rates during the wet season enabled this station to counteract the deficit flow rates during the dry season and thereby experience normal conditions for the year. During 1976, the maximum daily discharge equaled 1770 cfs (50.13 m^3/s) and no flow was reported during 19 days. The rate of discharge exceeded or equaled 100 cfs (2.83 m^3/s) over 50 percent of the time throughout the year at this station (Fig. 20).

An analysis of monthly discharge rates for these stations (40 Mile Bend to Monroe and Monroe to Carnestown) revealed two different situations. The discharge exceeded the mean during the months of June, September and October at the 40 Mile Bend to Monroe location (Table 23). However, the area from Monroe to Carnestown experienced greater than normal flow rates during the months of March, June, July and August (Table 24). During the rest of the months in 1976 both stations recorded deficit discharge rates.

The only location for discharge measurements in the Taylor Slough within Everglades National Park is along the Park road. These stations are dispersed along a three mile section of the road in the slough area. Measurements throughout 1976 at these stations recorded an above-average discharge value for the slough, which experienced a mean daily discharge of 43.9 cfs (1.24 m^3/s) compared to the daily mean of 33.1 cfs (0.94 m^3/s) (Table 20). Hence, 133 percent of the normally expected

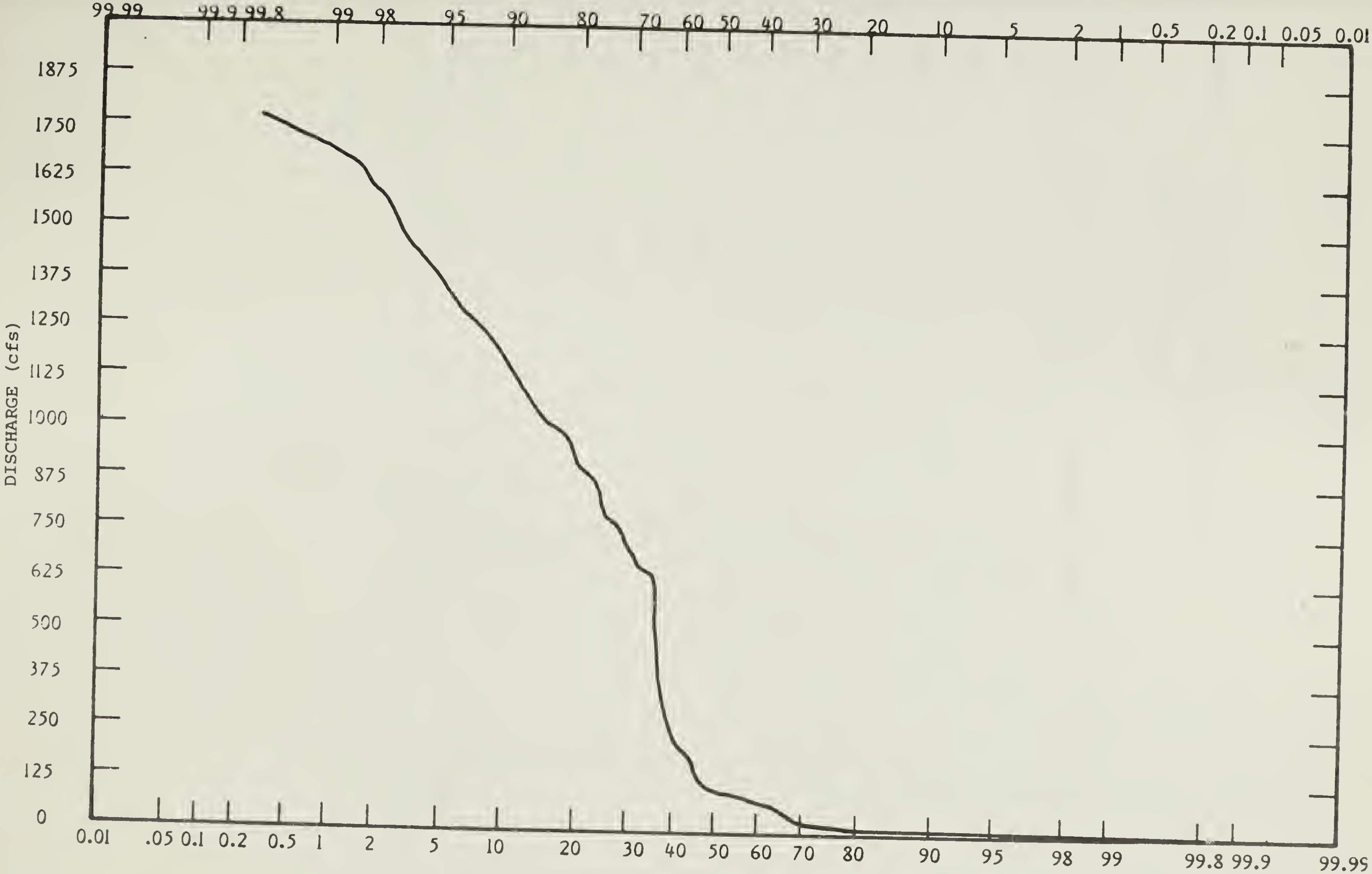


Figure 20: 1976 Flow Duration Curve, Monroe to Carnestown

Table 24. 1976 Discharge Tamiami Canal Outlets
Monroe to Carnestown

Month	Total Mean Discharge	1976 Mean Discharge	% Discharge 1976
Jan.	65	1.97	3
Feb.	58	13	22.4
Mar.	191	32.6	17
Apr.	52	2.16	4.1
May	43	79.8	185
Jun.	668	775	116
Jul.	799	980	123
Aug.	889	1,307	147
Sept.	1,046	944	90
Oct.	645.8	508	79
Nov.	277	97.5	35
Dec.	106	86.9	82
Total	4,839.8	4,827.93	99.8%

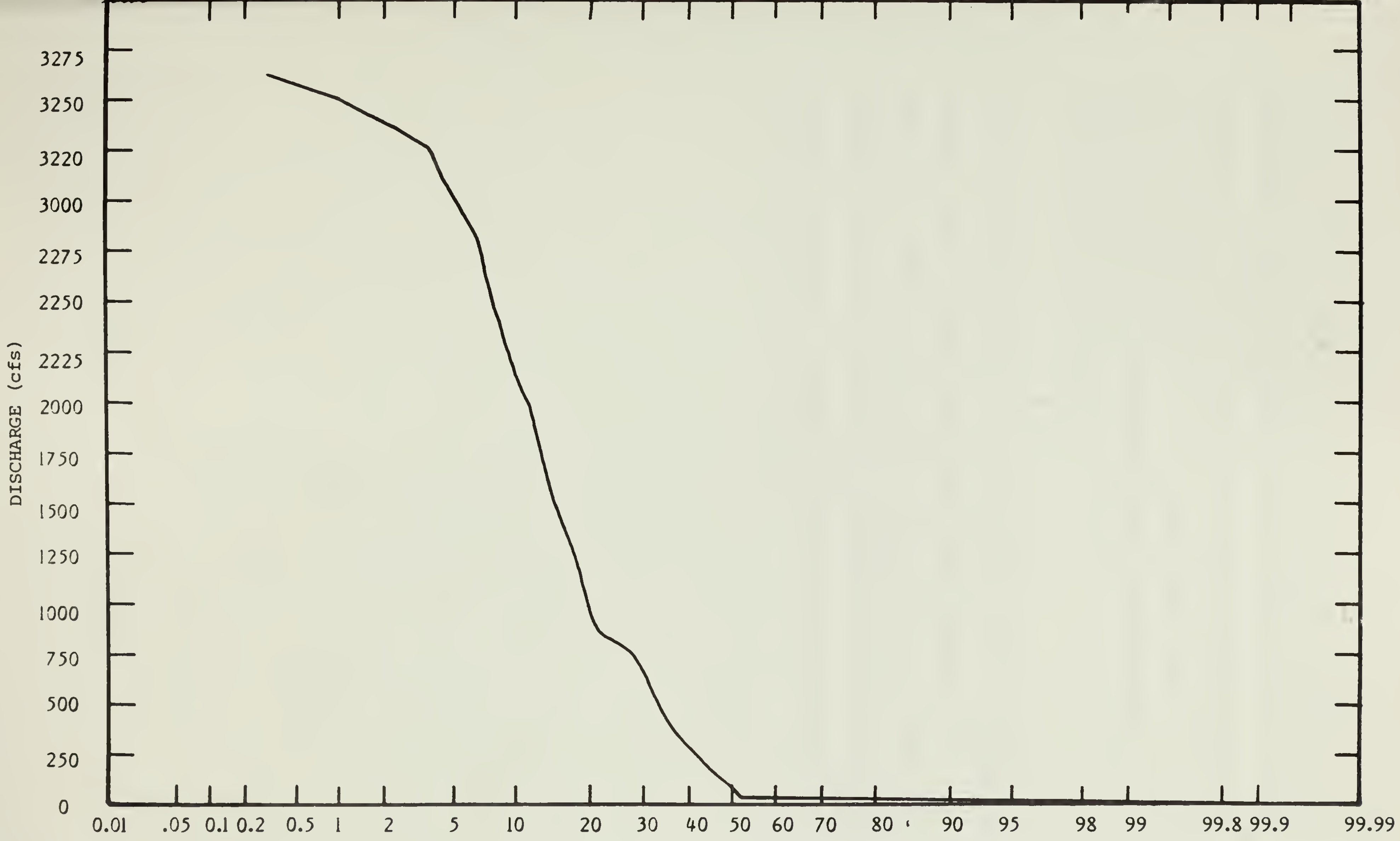


Figure 21: 1976 Flow Duration Curve, Taylor Slough at Bridge

discharge occurred at this location in the slough throughout the year (based on the means for the period of record). During this time the daily maximum flow was 281 cfs (7.93 m^3/s) and a total of 176 days experienced no flow. The flow duration curve for Taylor Slough indicates flow rates equal to or in excess of 35 cfs (0.99 m^3/s) for at least 50 percent of the time throughout the year (Fig. 21).

During the months of March, April, May, June, August and September, average or above-average discharge rates were reported in the Taylor Slough region (Table 25). Two months, June and September, experienced discharge rates far in excess of the norm for the period of record (292% and 323%, respectively). During the remaining months, discharge values in Taylor Slough approximated the norm.

Table 25. 1976 Discharge Taylor Slough

Month	Total Mean Discharge	1976 Mean Discharge	% Discharge 1976
Jan.	0.48	0	0
Feb.	0.17	0	0
Mar.	0	0	100
Apr.	0	0	100
May	6.05	3.26	54
Jun.	61.36	179	292
Jul.	74.6	51	68
Aug.	35.7	76	213
Sept.	52.7	170	323
Oct.	63.46	32.4	51
Nov.	26.63	15.49	58
Dec.	76.34	0	0
Total	397.49	527.15	133%

VI. CONCLUSION

The hydrologic parameters monitored throughout Everglades National Park help to provide insight into the delicate ecosystem maintenance of the Park. The yearly variation in the spatial and temporal distribution of the hydrologic inputs definitely has an impact on the South Florida environment.

The hydrologic inputs monitored throughout Everglades National Park and Big Cypress National Preserve during 1976 varied from the norm throughout the year according to past observations. The following can be concluded from the data presented in this report:

1. Temperatures: normal
2. Accumulated Park Rainfall: deficit by 2.23 inches (5.66 cm)
3. Rainfall by Station:
    - Royal Palm: normal
    - Flamingo: normal
    - Tamiami Ranger Station: normal
    - Everglades City Ranger Station: deficit by 6.14 inches (-15.60 cm)
4. Water Levels:
    - January - April: lower than normal
    - May - August: greater than normal
    - September - December: above/below normal

5. S-12 Water Deliveries to Everglades National Park: above normal (141 percent of minimum regulation levels)

6. Discharge by Station:

Tamiami Canal Outlets: deficit

East of Everglades National Park: deficit

West of Everglades National Park: normal

Taylor Slough: greater than normal

APPENDIX

HYDROLOGY STATION INDEX

Data Collected by Everglades National Park
Record Collected Infrequently (Discontinuous)

		Location		Water Level Period of Record		Rainfall Period of Record	
Station	USGS Designation	Latitude	Longitude	From	To	From	To
E-1	none	N25°38'45"	W80°45'20"	12/15/71	Present	11/15/73	Present
E-2	none	N25°38'10"	W80°43'58"	"	"	"	"
E-3	none	N25°37'45"	W80°43'00"	"	"	"	"
E-4	none	N25°37'15"	W80°42'30"	"	"	"	"
E-5	none	N25°37'00"	W80°44'30"	"	"	"	"
E-6	none	N25°36'15"	W80°44'32"	"	"	"	"
E-7	none	N25°35'40"	W80°45'00"	"	"	"	"
E-8	none	N25°35'07"	W80°45'58"	"	"	"	"
E-9	none	N25°34'34"	W80°46'02"	"	"	"	"
E-10	none	N25°33'39"	W80°46'32"	"	"	"	"
E-11	none	N25°33'00"	W80°47'02"	"	"	"	"
E-12	none	N25°32'08"	W80°47'32"	"	"	"	"
E-13	none	N25°31'30"	W80°47'43"	"	"	"	"
E-14	None	N25°31'04"	W80°48'20"	"	"	"	"
E-15	none	N25°30'25"	W80°48'57"	"	"	"	"
E-16	none	N25°30'42"	W80°49'12"	"	"	"	"
E-17	none	N25°29'47"	W80°49'40"	"	"	"	"
E-18	none	N25°27'38"	W80°51'53"	"	"	"	"
E-19	none	N25°29'00"	W80°50'00"	12/15/71	Present	none	none
E-20	none	N25°43'00"	W80°40'23"	12/20/67	Present	none	none
E-21	none	N25°43'00"	W80°40'19"	"	"	"	"
E-22	none	N25°42'04"	W80°40'25"	"	"	"	"
E-23	none	N25°42'04"	W80°40'21"	"	"	"	"
E-24	none	N25°39'56"	W80°40'27"	"	"	"	"
E-25	none	N25°39'54"	W80°40'27"	"	"	"	"

Station	USGS Designation	Location Latitude	Location Longitude	Water Level Period of Record From	Water Level Period of Record To	Rainfall Period of Record From	Rainfall Period of Record To
E-26	none	N25°36'27"	W80°40'20"	12/20/67	Present	none	none
E-27	none	N25°44'40"	W80°50'07"	3/9/77	Present	none	none
E-28	none	N25°43'43"	W80°50'18"	3/8/77	"	"	"
E-29	none	N25°32'45"	W80°50'40"	3/9/77	"	"	"
E-30	none	N25°41'48"	W80°51'00"	3/8/77	"	"	"
E-31	none	N25°41'17"	W80°51'29"	3/8/77	"	"	"
E-32	none	N25°41'08"	W80°51'29"	3/8/77	"	"	"
E-33	none	N25°40'23"	W80°51'29"	3/9/77	"	"	"
E-34	none	N25°39'36"	W80°51'29"	3/9/77	"	"	"
E-35	none	N25°38'45"	W80°51'29"	3/8/77	"	"	"
E-36	none	N25°37'56"	W80°51'29"	3/9/77	"	"	"
E-37	none	N25°36'54"	W80°51'29"	3/10/77	"	"	"
E-39	none	N25°36'54"	W80°53'27"	3/10/77	"	"	"
E-40	none	N25°36'54"	W80°54'27"	3/10/77	"	"	"
E-41	none	N25°36'54"	W80°55'27"	3/10/77	"	"	"
E-42	none	N25°43'23"	W80°44'35"	3/15/77	"	"	"
E-43	none	N25°43'22"	W80°43'23"	"	"	"	"
E-44	none	N25°42'11"	W80°42'58"	"	"	"	"
E-45	none	N25°41'23"	W80°42'35"	"	"	"	"
E-46	none	N25°40'27"	W80°42'52"	"	"	"	"
E-47	none	N25°38'52"	W80°42'28"	"	"	"	"
E-48	none	N25°37'58"	W80°42'09"	"	"	"	"
E-49	none	N25°36'40"	W80°40'20"	"	"	"	"
E-50	none	N25°35'47"	W80°40'20"	"	"	"	"
E-51	none	N25°34'52"	W80°40'20"	"	"	"	"
E-52	none	N25°34'00"	W80°40'20"	3/15/77	"	"	"

		Location		Water Level Period of Record		Rainfall Period of Record	
Station	USGS Designation	Latitude	Longitude	From	To	From	To
E-53	none	N25°32'53"	W80°40'20"	3/15/77	Present	none	none
E-54	none	N25°44'48"	W80°33'36"	3/14/77	"	"	"
E-55	none	N25°43'58"	W80°33'36"	3/14/77	"	"	"
E-56	none	N25°42'50"	W80°34'30"	3/15/77	"	"	"
E-57	none	N25°42'35"	W80°35'23"	"	"	"	"
E-58	none	N25°42'25"	W80°36'05"	"	"	"	"
E-59	none	N25°41'57"	W80°37'04"	"	"	"	"
E-61	none	N25°40'10"	W80°39'05"	"	"	"	"
E-62	none	N25°39'35"	W80°39'30"	"	"	"	"
E-63	none	N25°38'25"	W80°40'00"	"	"	"	"
E-64	none	N25°37'40"	W80°40'10"	"	"	"	"
E-65	none	n.a.	n.a.	"	"	"	"

P. STATIONS

Data Collected Continuously

	USGS	Location		Period of Record		
Station	Designation	Lat.	Long.	From	To	Parameters[*]
P-33	02290815	N25°36'30"	W80°41'30"	10/52	Present	W.L.
P-34	02290870	N25°36'30"	W80°55'30"	1/53	Present	W.L.
P-35	02290830	N25°27'20"	W80°52'30"	2/53	Present	W.L.
P-36	02290828	N25°32'30"	W80°47'00"	2/68	Present	W.L.
P-37	02290810	N25°17'30"	W80°40'30"	1/53	Present	W.L.
P-38	02290820	N25°22'22"	W80°50'01"	1/53	Present	W.L.
			ERTS STATIONS			
NP 201	02290861	N25°43'05"	W80°43'33"	10/74	Present	W.L., RF
NP 202	02290862	N25°37'25"	W80°44'22"	1/75	Present	W.L., RF
NP 203	02290832	N25°38'54"	W80°41'18"	10/73	Present	W.L., RF
NP 204	02290829	N25°32'12"	W80°47'06"	10/73	Present	W.L., RF
NP 205	02290868	N25°42'36"	W80°50'23"	10/74	Present	W.L., RF
NP 206	02290811	N25°31'42"	W80°40'29"	10/74	Present	W.L., RF
NP 207	02290810	N25°17'30"	W80°40'30"	1/76	Present	W.L., RF
			ADDITIONAL PARK STATIONS			
NP-44	none	N25°25'45"	W80°43'10"	1961	Present	W.L.
NP-62	none	N25°26'10"	W80°47'00"	1964	Present	W.L.
Taylor Slough at Bridge	02290800	N25°24'05"	W80°36'25"	9/60	Present	W.L.
Headqtrs Pond	none	N25°23'30"	W80°34'45"	9/65	Present	W.L.

[*] WL -Water level; RF - Rainfall

Big Cypress National Preserve
Hydrologic Data Collected Continuously

Station #	USGS Designation	Location Lat.	Location Long.	Period of Record From	Period of Record To	Parameters*
Tamiami Canal Outlets, Levee 30 to 67A	02289060	N25°45'40"	W80°33'40"	1/39	Present	Q, W.L.
TCO: 67A to 40 Mile Bend	02289040	N25°45'42"	W80°43'34"	11/39	Present	Q, W.L.
TCO: 40 Mile Bend to Monroe	02288900	N25°51'05"	W80°58'50"	11/39	Present	Q, W.L.
TCO: Monroe to Carnestown	02288800	N25°53'10"	W81°15'30"	8/60	Present	Q, W.L.
Tamiami Canal at Bridge 77	02288780	N25°53'55"	W81°21'25"	8/60	Present	W.L.
Tamiami Canal at 40 Mile Bend	02288990	N25°45'50"	W80°49'50"	12/39	Present	W.L.
Roberts Lake Slough near Monroe	02290950	N25°47'14"	W81°05'59"	1/73	Present	W.L.
Barron River near Everglades	02291000	N25°57'28"	W81°21'19"	1/52	Present	W.L.
Faka Union Canal near Copeland	02291143	N25°57'59"	W81°30'23"	12/69	Present	W.L.

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*W.L. - Water Level

RF - Rainfall

Q - Discharge

TCO - Tamiami Canal Outlets

WATER LEVEL DATA

9-230 D
Rev. 7-67)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY (WATER RESOURCES DIVISION)

Station
Number P. Rose

TAYLOR SLOUGH @ BRIDGE 1976 Water Levels

DAY	JAN	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1	1.30	0.85	1.38	0.25	0.20	3.58	4.23	3.06	3.81	—	2.60	2.37
2	1.27	0.92	1.37	0.21	0.30	3.57	4.18	3.12	3.86	—	2.57	2.34
3	1.25	0.98	1.36	0.16	0.57	3.53	4.11	3.12	4.06	—	3.20	2.31
4	1.23	1.01	1.34	0.12	0.85	3.50	4.02	3.21	4.18	4.03	3.43	2.27
5	1.20	1.04	1.32	0.08	0.98	3.45	3.92	3.46	4.21	4.00	3.41	2.24
6	1.19	1.05	1.29	0.09	1.07	3.42	3.83	3.49	4.22	3.94	3.33	2.21
7	1.17	1.06	1.26	0.30	1.12	3.42	3.75	3.49	4.24	3.88	3.23	2.19
8	1.15	1.04	1.23	0.45	1.14	3.47	3.68	3.48	4.20	3.82	3.14	2.15
9	1.12	1.01	1.20	0.55	1.14	3.49	3.62	3.51	4.16	3.78	3.04	2.10
10	1.09	0.98	1.17	0.61	1.13	3.67	3.60	3.55	4.10	3.73	2.95	2.07
11	1.07	0.95	1.12	0.64	1.15	3.90	3.58	3.56	4.06	3.69	2.89	2.04
12	1.05	0.92	1.08	0.65	1.21	4.00	3.55	3.54	4.02	3.64	2.83	2.02
13	1.03	0.89	1.04	0.63	1.29	4.10	3.49	3.50	3.97	3.58	2.82	2.00
14	1.02	0.86	1.00	0.61	1.34	4.17	3.41	3.46	3.98	3.52	2.77	1.98
15	1.02	0.84	0.96	0.60	1.39	4.21	3.33	3.41	4.30	3.45	2.73	1.95
16	1.14	0.81	0.92	0.58	2.08	4.22	3.24	3.40	4.49	3.38	2.68	1.93
17	1.15	0.79	0.87	0.55	2.15	4.19	3.20	3.46	4.52	3.32	2.63	1.90
18	1.11	0.77	0.83	0.51	2.21	4.26	3.14	3.49	4.50	3.25	2.58	1.85
19	1.08	0.74	0.79	0.48	2.21	4.34	3.06	3.80	4.46	3.19	2.62	1.82
20	1.06	0.71	0.75	0.44	2.26	4.35	2.98	4.10	4.50	3.15	2.83	1.79
21	1.04	0.69	0.70	0.41	2.27	4.32	2.92	4.17	4.46	3.12	2.83	1.78
22	1.02	0.66	0.66	0.39	2.56	4.27	2.92	4.16	4.42	3.06	2.80	1.77
23	1.00	0.64	0.62	0.37	2.64	4.22	3.00	4.12	4.40	3.00	2.73	1.72
24	0.98	0.62	0.58	0.35	2.61	4.28	2.97	4.06	4.42	2.95	2.67	1.95
25	0.95	0.86	0.53	0.32	2.57	4.34	2.90	4.02	4.40	2.91	2.62	2.02
26	0.93	1.12	0.49	0.29	2.51	4.32	2.83	3.99	4.35	2.86	2.58	2.04
27	0.90	1.31	0.45	0.26	2.47	4.27	2.76	3.94	4.29	2.82	2.53	2.07
28	0.90	1.35	0.41	0.27	2.51	4.22	2.71	3.95	4.22	2.77	2.49	2.07
29	0.88	1.37	0.37	0.27	2.89	4.19	2.72	3.90	4.15	2.72	2.45	2.07
30	0.86	—	0.33	0.23	3.43	4.24	2.88	3.83	4.07	2.68	2.42	2.06
31	0.84	—	0.29	—	3.56	—	3.00	3.79	—	2.63	—	2.05
$\bar{x}$	1.06	0.93	0.89	0.39	1.80	3.98	3.34	3.65	4.23	3.32	2.81	2.04
MAX	1.30	1.37	1.38	0.65	3.56	4.35	4.23	4.17	4.52	4.03	3.43	2.37
MIN	0.84	0.62	0.29	0.08	0.20	3.42	2.71	3.06	3.81	2.63	2.42	1.72

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UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY (WATER RESOURCES DIVIS

Station
Number
P. ROSE

HEADQUARTERS POND
99976

DAY	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1			1.40				3.04			3.18	2.33	2.18
2		1.38	1.38	0.22		2.46	3.00	2.84				
3		1.40	1.35		0.96	2.46					3.56	2.15
4		1.39				2.47		2.92		3.00	3.36	
5	1.22	1.38			1.19						2.86	
6				L. 0.12 H. 0.20	1.14			2.84		2.90		2.09
7	1.20			0.64	1.11	2.47	2.74		3.14	2.87		
8	1.19		1.22	0.78		2.59	2.73		3.10	2.83	2.59	2.05
9	1.14	1.21	1.20	0.86		2.56	2.70	2.70	3.08		2.54	2.01
10		1.16	1.18		1.00	2.90			3.06		2.50	1.99
11		1.10	1.13		1.00	3.40						
12	1.09	1.08	1.08	0.74			2.70			2.80	2.46	
13				0.70	1.04				2.98	2.77		1.94
14	1.04			0.65	1.06	3.14	2.60			2.74		
15	1.06		0.97	0.68					3.16	2.70	2.40	1.90
16	1.21		0.92	0.65		3.17	2.50		3.27		2.38	1.88
17		0.89	0.88		1.96	3.14			3.46		2.36	1.86
18		0.86	0.86		1.90	3.15					2.34	
19	1.10	0.80									2.36	
20	1.08			0.50				3.51	3.93			1.78
21	1.04			0.48	1.82	3.16	2.41		3.75	2.67		1.76
22	1.04		0.68	0.48			2.46				2.48	1.72
23	1.01	0.70	0.64	0.50		3.10	2.74				2.40	1.70
24		0.67	0.60			3.58					2.36	
25		0.98	0.56			3.46						
26	0.95			0.39			2.40				2.30	
27		1.40		0.35						2.48		1.98
28							2.40			2.45		1.95
29	0.92		0.40	0.53			2.34			2.42	2.26	1.94
30	0.90	—	0.36	0.40		3.06	2.66	2.96			2.24	1.90
31		—	0.31	—		-			—		—	
x̄	1.07	1.09	0.90	0.54	1.29	2.96	2.63	2.96	3.29	2.75	2.53	1.93
MAX	1.22	1.40	1.40	0.86	1.96	3.58	3.04	3.51	3.75	3.18	3.56	2.18
MIN	0.90	0.67	0.31	0.20	0.96	2.46	2.34	2.84	2.98	2.42	2.24	1.70

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UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY (WATER RESOURCES DIVISION)

Station Number P. ROSE

NP-44 (PINE GLADE LAKE) 1976 WATER LEVEL

DAY	JAN	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1	1.15	0.65	—	—	-0.12	4.72	4.68	4.30	4.59	4.50	2.84	2.23
2	1.13	0.66	—	-0.22	-0.10	4.70	4.65	4.46	4.72	4.50	2.78	2.18
3	1.10	0.67	—	—	2.45	4.73	4.64	4.56	4.72	—	2.90	2.15
4	1.08	0.68	—	—	2.40	4.70	4.60	4.56	4.72	—	2.90	2.13
5	1.06	0.68	1.23	—	2.24	4.66	4.55	4.56	4.74	—	2.85	2.05
6	1.05	0.67	—	—	2.05	4.65	4.53	4.56	4.76	—	2.75	—
7	1.02	0.67	—	—	1.93	4.63	4.51	4.57	4.74e	—	2.70	—
8	1.00	0.66	—	—	1.83	4.55	4.50	4.54	4.73	4.40	2.65	—
9	0.95	0.64	—	0.50	1.71	4.63	4.44	4.53	4.73	4.39	2.61	—
10	0.90	0.61	—	—	3.35	4.65	4.56	4.50	4.68	4.44	2.57	—
11	0.90	0.57	—	—	3.35	4.79	4.54	4.50	4.67	4.43	2.55	—
12	0.86	0.56	0.83	—	3.20	4.80	4.52	4.48	4.65	4.40	2.51	—
13	0.85	0.55	—	—	2.98	4.83	4.45	4.43	4.63	4.35	2.74	—
14	0.83	0.55	—	—	2.75	4.84	4.41	4.40	4.61	4.30	2.74	-
15	0.82	0.53	—	—	2.60	4.84	4.30	4.36	4.75	4.25	2.74	—
16	0.82	0.51	—	0.43	—	4.76	4.25	4.31	4.75	4.14	2.70	—
17	0.86	0.50	—	0.40	3.68	4.74	4.18	4.30	4.75	4.10	2.60	1.65
18	0.85	0.50	—	0.37	3.80	4.84	4.27	4.32	4.75	4.03	2.54	1.65
19	0.84	0.49	0.44	0.34	3.70	4.86	4.20	4.45	4.72	3.92	2.50	1.60
20	0.84	0.49	—	0.23	3.60	4.80	4.10	4.61	4.72	3.89	2.50	1.55
21	0.84	0.49	—	0.15	3.50 4.05	4.75	3.95	4.61	4.69	3.77	2.50	1.52
22	0.84	0.48	—	0.13	4.10 4.31	4.70	3.85	4.61	4.67	3.67	2.48	1.50
23	0.83	—	—	0.05	4.32	4.70	3.80	4.58	4.65	3.56	2.43	1.50
24	0.80	—	—	0.05	4.32	4.70	3.72	4.56	4.64	3.50	2.40	1.93
25	0.78	—	—	0.04	4.33	4.66	3.67	4.55	4.63	3.42	2.39	2.10
26	0.75	—	0.12	0.04	4.28	4.65	3.50	4.55	4.63	3.33	2.38	2.37
27	0.72	1.63	—	0.04	4.20 4.53	4.65	3.40 4.04	4.55	4.59e	3.21	2.37	2.37
28	0.71	—	—	0.03	4.53	4.85	4.00	4.55	4.54e	3.15	2.32	2.33
29	0.70	—	—	0.02	4.55	4.75	3.90 4.30	4.55	4.50	3.09	2.27	2.30
30	0.68	—	—	-0.13	4.55	4.70	4.30	4.55	4.50	3.00	2.23	2.24
31	0.67	—	—	—	4.53	—	4.30	4.52	—	2.95	—	2.20
$\bar{x}$	0.88	0.63	0.66	0.15	3.26	4.73	4.23	4.35	4.67	3.87	2.58	2.08
MAX	1.15	1.63	1.23	0.50	4.55	4.86	4.68	4.61	4.76	4.50	2.90	2.37
MIN	0.67	0.48	0.12	-0.22	-0.12	4.55	3.40	4.30	4.50	2.95	2.23	1.50

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UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY (WATER RESOURCES DIVISION)

Station Number P. ROSE

92

NP-62 (PA-HAY-OKEE) 1976 WATER LEVELS

DAY	JAN	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1	1.52	1.03	1.28	0.04	0.48	2.78	2.91	—	—			
2	1.51	1.03	1.25	0.04	—	2.83	2.90	—	—			
3	1.45	1.00	1.20	-0.01	—	2.90	2.85	—	—			
4	1.44	0.97	1.18	-0.10	—	2.90	2.80	—	—			
5	1.41	0.94	1.16	-0.15	—	2.90	2.75	—	—			
6	1.38	0.92	1.12	-0.16 0.50	—	2.90	2.74	—	—			
7	1.35	0.90	1.10	0.60	1.00	2.90	2.73	—	—			
8	1.34	0.85	1.05	0.67	—	2.91	2.72	—	—	4.65		
9	1.30	0.80	1.07	0.67	1.35	2.99	2.72	—	—			
10	1.24	0.75	1.04	0.62	1.98	3.02	2.76	—	—			
11	1.20	0.74	1.00	0.58	2.19	3.25	2.76	—	—			
12	1.18	0.71	0.98	0.55	2.19	—	—	—	—			
13	1.15	0.70	0.90	0.54	2.18	—	—	—	—			
14	1.13	0.64	0.85	0.54	2.16	—	—	—	—			
15	1.10	0.60	0.80	0.53	2.14	2.99	—	—	—			
16	1.08	0.57	0.75	0.52	—	2.99	—	—	—			
17	1.07	0.55	0.70	0.49	2.47	2.99	—	—	3.03			
18	1.03	0.53	0.64	0.45	2.53	3.00	—	—				
19	1.00	0.51	0.60	0.40	2.51	3.00	—	—				
20	1.00	0.50	0.54	0.34	2.50	—	—	—				
21	0.98	0.47	0.50	0.31	2.56	—	—	—				
22	0.97	0.46	0.44	0.27	2.57	—	—	—				
23	0.97	0.43	0.43	0.29	2.59	—	—	—				
24	0.93	0.90	0.40	0.32	2.58	—	—	—				
25	0.90	1.20	0.36	0.35	2.55	2.93	—	—				
26	0.88	1.28	0.35	0.30	2.53	2.90	—	—			2.25	
27	0.86	1.31	0.26	0.25	2.50	2.89	—	—				
28	0.83	1.31	0.22	0.23	2.48	2.93	—	—				
29	0.80	1.30	0.16	0.20	2.63	2.93	—	—				
30	0.79	—	0.12e	0.19	2.65	2.93	—	—				
31	0.77	—	0.08	—	2.66		—	—	—		—	
$\bar{x}$	1.11	0.82	0.73	0.33	2.25	2.94	—	—				
MAX	1.52	1.31	1.28	0.67	2.66	3.25	2.91	—				
MIN	0.77	0.43	0.08	-0.16	0.48	2.78	2.72	—				

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(Rev. 7-67)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY (WATER RESOURCES DIVISION)

Station
Number P. Rose

P-33 1976 WATER LEVELS

DAY	JAN	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1	6.02	5.94	5.95	5.54	5.15	6.01	6.17	6.09	6.35	6.63	6.31	6.29
2	6.01	5.95	5.93	5.52	5.23	6.04	6.13	6.12	6.34	6.64	6.30	6.28
3	6.01	5.94	5.91	5.50	5.31	6.17	6.12	6.22	6.32	6.63	6.35	6.27
4	6.01	5.93	5.90	5.48	5.31	6.25	6.11	6.23	6.30	6.61	6.34	6.27
5	6.00	5.93	5.88	5.46	5.26	6.20	6.12	6.25	6.29	6.61	6.33	6.26
6	6.00	5.92	5.87	5.51	5.21	6.20	6.14	6.26	6.28	6.60	6.32	6.25
7	6.00	5.92	5.86	5.57	5.17	6.19	6.12	6.31	6.28	6.59	6.32	6.24
8	6.00	5.91	5.85	5.56	5.28	6.19	6.14	6.27	6.28	6.59	6.31	6.24
9	5.99	5.91	5.84	5.54	5.36	6.17	6.21	6.24	6.28	6.59	6.30	6.22
10	5.99	5.90	5.83	5.52	5.36	618	6.23	6.21	6.27	6.59	6.30	6.21
11	5.98	5.90	5.81	5.50	5.36	6.21	6.22	6.19	6.29	6.59	6.30	6.21
12	5.98	5.89	5.80	5.48	5.35	6.23	6.22	6.17	6.34	6.58	6.33	6.21
13	5.98	5.89	5.79	5.46	5.34	6.28	6.20	6.18	6.43	6.57	6.39	6.20
14	5.98	5.88	5.78	5.46	5.32	6.25	6.17	6.18	6.43	6.55	6.37	6.20
15	5.98	5.88	5.77	5.45	5.34	6.22	6.15	6.18	6.45	6.53	6.36	6.19
16	5.98	5.87	5.76	5.42	5.55	6.20	6.16	6.16	6.48	6.52	6.35	6.19
17	5.97	5.87	5.75	5.39	5.57	6.21	6.17	6.16	6.49	6.50	6.34	6.18
18	5.96	5.86	5.73	5.37	5.59	6.25	6.16	6.15	6.53	6.49	6.33	6.17
19	5.95	5.85	5.72	5.34	5.60	6.23	6.14	6.23	6.53	6.47	6.32	6.17
20	5.95	5.85	5.71	5.32	5.62	6.22	6.12	6.28	6.57	6.47	6.32	6.16
21	5.96	5.84	5.69	5.30	5.62	6.19	6.11	6.27	6.55	6.47	6.32	6.17
22	5.97	5.83	5.68	5.29	5.65	6.16	6.10	6.28	6.53	6.44	6.35	6.15
23	5.96	5.83	5.67	5.27	5.65	6.15	6.10	6.29	6.52	6.43	6.34	6.15
24	5.96	5.83	5.65	5.23	5.64	6.14	6.09	6.31	6.52	6.41	6.33	6.23
25	5.96	5.92	5.64	5.22	5.62	6.14	6.08	6.37	6.54	6.40	6.32	6.23
26	5.95	5.96	5.62	5.23	5.60	6.13	6.07	6.42	6.54	6.39	6.32	6.24
27	5.95	5.98	5.61	5.18	5.60	6.12	6.07	6.38	6.54	6.37	6.32	6.24
28	5.95	5.97	5.60	5.15	5.75	6.12	6.08	6.35	6.54	6.36	6.31	6.23
29	5.95	5.97	5.59	5.11	5.98	6.13	6.08	6.33	6.54	6.35	6.31	6.23
30	5.94	—	5.57	5.06	6.01	6.14	6.08	6.34	6.54	6.33	6.30	6.22
31	5.93	—	5.56	—	6.03	—	6.08	6.37	—	6.32	—	6.23
$\bar{X}$	5.97	5.90	5.75	5.38	5.50	6.18	6.13	6.25	6.43	6.50	6.33	6.21
MAX	6.02	5.98	5.95	5.57	6.03	6.28	6.23	6.42	6.57	6.63	6.39	6.29
MIN	5.93	5.83	5.56	5.06	5.15	6.01	6.07	6.09	6.27	6.32	6.30	6.15

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UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY (WATER RESOURCES DIVISION)

Station Number P. Rose

P-34 1976 WATER LEVELS

DAY	JAN	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1	1.38	0.89	0.69	-0.66	0.70	2.08	2.11	1.71	2.27	2.15	1.75	1.80
2	1.36	0.90	0.63	-0.70	0.70	2.06	2.08	1.75	2.24	2.17	1.72	1.80
3	1.34	0.85	0.58	-0.75	0.95	2.05	2.05	1.82	2.22	2.17	1.73	1.79
4	1.32	0.82	0.52	-0.80	1.00	2.13	2.01	1.82	2.18	2.17	1.70	1.78
5	1.30	0.80	0.47	-0.85	0.99	2.19	1.98	1.85	2.16	2.17	1.68	1.77
6	1.29	0.78	0.42	-0.50	0.90	2.24	1.94	1.88	2.17	2.18	1.65	1.76
7	1.27	0.75	0.43	0.04	0.85	2.26	1.91	1.90	2.16	2.17	1.63	1.75
8	1.26	0.71	0.45	-0.02	1.01	2.35	1.90	1.89	2.17	2.18	1.61	1.75
9	1.24	0.67	0.38	-0.11	1.13	2.31	1.94	1.86	2.17	2.18	1.58	1.72
10	1.21	0.64	0.33	-0.21	1.19	2.32	2.03	1.86	2.14	2.17	1.57	1.71
11	1.20	0.61	0.27	-0.29	1.37	2.35	2.14	1.98	2.11	2.16	1.56	1.70
12	1.19	0.58	0.21	-0.37	1.40	2.34	2.17	1.98	2.08	2.15	1.56	1.68
13	1.17	0.54	0.17	-0.43	1.40	2.30	2.17	1.99	2.11	2.13	1.59	1.68
14	1.16	0.51	0.13	-0.48	1.44	2.24	2.14	1.97	2.13	2.11	1.57	1.67
15	1.14	0.48	0.09	-0.52	1.44	2.19	2.11	1.96	2.18	2.09	1.56	1.66
16	1.17	0.44	0.05	-0.58	1.56	2.14	2.06	1.94	2.23	2.08	1.55	1.66
17	1.18	0.40	-0.01	-0.65	1.53	2.13	2.03	1.95	2.25	2.06	1.53	1.66
18	1.13	0.37	-0.07	-0.72	1.49	2.16	1.99	1.97	2.24	2.05	1.52	1.65
19	1.08	0.33	-0.13	-0.78	1.46	2.15	1.95	2.09	2.23	2.03	1.51	1.64
20	1.06	0.29	-0.18	-0.76	1.45	2.12	1.91	2.16	2.26	2.03	1.51	1.63
21	1.07	0.24	-0.23	-0.41	1.54	2.07	1.87	2.18	2.25	2.02	1.55	1.62
22	1.09	0.23	-0.25	-0.28	1.71	2.03	1.83	2.18	2.25	2.00	1.62	1.60
23	1.06	0.18	-0.16	-0.38	1.76	2.04	1.79	2.19	2.23	1.97	1.65	1.60
24	1.03	0.21	-0.22	-0.48	1.79	2.01	1.75	2.20	2.21	1.96 ✓	1.69	1.68
25	1.01	0.90	-0.31	-0.58	1.77	1.98	1.72	2.24	2.19	1.94	1.73	1.68
26	0.98	0.92	-0.36	-0.66	1.73	1.96	1.68	2.28	2.18	1.92	1.75	1.69
27	0.97	0.85	-0.41	-0.74	1.69	1.96	1.65	2.31	2.15	1.89	1.77	1.69
28	0.95	0.80	-0.46	-0.13	1.75	1.96	1.64	2.29	2.18	1.86	1.78	1.67
29	0.91	0.75	-0.50	0.79	1.98	1.97	1.61	2.26	2.15	1.83	1.81	1.67
30	0.88	—	-0.55	0.67	2.04	2.00	1.62	2.25	2.12	1.80	1.81	1.66
31	0.85	—	-0.60	—	2.08	—	1.66	2.28	—	1.77	—	1.65
$\bar{x}$	1.14	0.60	0.04	-0.41	1.41	2.14	1.92	2.03	2.19	205	1.64	1.69
Max	1.38	0.92	0.69	0.79	2.08	2.35	2.17	2.31	2.27	2.18	1.81	1.80
Min	0.85	0.18	-0.60	-0.85	0.70	1.96	1.61	1.71	2.08	1.77	1.51	1.60

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UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY (WATER RESOURCES DIVISION)

Station Number P. ROSE

P-35 1976 WATER LEVELS

DAY	JAN	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1	1.27	0.93	0.97	0.93	0.97	1.80	1.93	1.52	2.08	2.12	1.62	1.12
2	1.20	1.19	0.86	0.90	1.22	1.82	1.85	1.58	2.13	2.09	1.54	1.20
3	1.15	0.98	0.71	0.64	1.24	1.93	1.72	1.74	2.11	2.03	1.48	1.22
4	1.19	0.70	0.61	0.68	1.12	1.98	1.59	1.79	2.08	1.98	1.44	1.26
5	1.04	0.49	0.57	0.82	0.76	2.05	1.54	1.72	2.09	1.95	1.48	1.29
6	0.93	0.41	0.62	1.12	0.62	2.15	1.47	1.72	2.18	1.94	1.34	1.36
7	0.89	0.48	0.69	1.29	0.67	2.17	1.46	1.76	2.30	1.96	1.29	1.50
8	0.95	0.55	0.71	1.34	0.81	2.17	1.53	1.92	2.30	1.96	1.29	1.58
9	0.77	0.58	0.89	1.29	0.94	2.21	1.67	1.92	2.26	1.99	1.24	1.37
10	0.14	0.41	1.07	0.98	1.15	2.27	1.72	1.91	2.20	1.97	1.30	1.14
11	0.15	0.33	0.96	0.78	1.29	2.32	1.75	1.98	2.19	1.94	1.34	1.17
12	0.34	0.44	0.72	0.86	1.32	2.35	1.81	1.92	2.25	1.85	1.37	1.28
13	0.40	0.47	0.66	1.03	1.35	2.36	1.77	1.90	2.23	1.78	1.36	1.30
14	0.49	0.50	0.75	1.18	1.31	2.34	1.74	1.88	2.23	1.81	1.33	1.32
15	0.58	0.52	0.83	1.13	1.34	2.30	1.70	1.85	2.29	1.83	1.41	1.36
16	0.68	0.50	1.00	0.96	1.63	2.26	1.65	1.83	2.32	1.82	1.42	1.42
17	1.07	0.60	1.18	0.84	1.56	2.21	1.62	1.83	2.29	1.86	1.39	1.35
18	1.15	0.71	0.92	0.82	1.55	2.19	1.61	1.84	2.23	1.94	1.42	1.25
19	0.61	0.75	0.58	0.83	1.47	2.15	1.53	2.07	2.18	1.87	1.48	1.25
20	0.37	0.68	0.64	0.93	1.34	2.09	1.40	2.25	2.15	1.86	1.53	1.33
21	0.59	0.57	0.64	1.06	1.33	2.02	1.30	2.20	2.14	1.91	1.61	1.43
22	0.69	0.61	0.69	1.11	1.43	1.97	1.30	2.13	2.16	1.85	1.64	1.27
23	0.66	0.54	0.69	1.00	1.59	2.00	1.31	2.06	2.17	1.76	1.46	1.22
24	0.70	0.05	0.20	0.96	1.77	1.97	1.32	2.02	2.20	1.73	1.30	1.22
25	0.80	0.21	0.08	0.99	1.72	1.92	1.38	2.02	2.27	1.78	1.20	1.20
26	0.88	0.35	0.34	1.14	1.63	1.88	1.43	2.03	2.25	1.83	1.22	1.39
27	0.90	0.76	0.53	1.17	1.53	1.89	1.49	2.01	2.21	1.84	1.36	1.31
28	0.86	0.86	0.69	1.12	1.53	1.94	1.51	1.98	2.18	1.79	1.40	1.23
29	0.66	0.93	0.73	1.05	1.66	1.95	1.53	1.95	2.15	1.60	1.43	1.36
30	0.65	—	0.70	0.83	1.67	1.91	1.55	1.96	2.12	1.52	1.37	1.26
31	0.77	—	0.76	—	1.75	—	1.52	2.04	—	1.61	—	1.30
$\bar{x}$	0.76	0.59	0.71	0.99	1.33	2.09	1.57	1.91	2.20	1.86	1.40	1.30
MAX	1.27	1.19	1.18	1.34	1.77	2.36	1.93	2.25	2.32	2.12	1.64	1.58
MIN	0.14	0.05	0.08	0.64	0.62	1.80	1.30	1.52	2.08	1.52	1.20	1.12

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(Rev. 7-67)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY (WATER RESOURCES DIVISION)

Station Number P. Rose

P-36 1976 WATER LEVELS

DAY	JAN	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1	3.27	3.19	3.16	2.87	2.67	3.60	3.58	3.50	3.81	3.84	3.67	3.62
2	3.27	3.19	3.13	2.85	2.78	3.60	3.57	3.50	3.83	3.86	3.66	3.61
3	3.27	3.19	3.10	2.82	2.83	3.61	3.55	3.52	3.84	3.87	3.66	3.61
4	3.27	3.19	3.08	2.80	2.85	3.63	3.53	3.52	3.81	3.87	3.65	3.60
5	3.27	3.18	3.06	2.77	2.82	3.70	3.51	3.53	3.79	3.88	3.63	3.59
6	3.27	3.18	3.04	2.78	2.79	3.78	3.49	3.58	3.78	3.88	3.62	3.59
7	3.26	3.18	3.02	2.87	2.75	3.79	3.49	3.57	3.79	3.88	3.61	3.59
8	3.26	3.17	3.00	2.88	2.73	3.79	3.55	3.60	3.79	3.88	3.60	3.59
9	3.27	3.16	2.98	2.87	2.76	3.81	3.61	3.65	3.83	3.89	3.59	3.57
10	3.26	3.16	2.97	2.84	2.77	3.83	3.64	3.79	3.84	3.95	3.59	3.55
11	3.25	3.15	2.97	2.81	2.82	3.86	3.67	3.75	3.84	3.92	3.58	3.55
12	3.25	3.15	2.96	2.78	2.81	3.86	3.70	3.72	3.94	3.90	3.58	3.54
13	3.25	3.14	2.96	2.74	2.78	3.83	3.69	3.73	3.87	3.88	3.60	3.56
14	3.25	3.13	2.96	2.73	2.75	3.80	3.67	3.74	3.86	3.87	3.61	3.65
15	3.25	3.13	2.95	2.75	2.72	3.78	3.64	3.71	3.88	3.85	3.61	3.62
16	3.25	3.13	2.95	2.71	2.92	3.81	3.60	3.69	3.85	3.84	3.61	3.60
17	3.24	3.11	2.95	2.67	2.94	3.76	3.58	3.67	3.82	3.84	3.61	3.58
18	3.24	3.10	2.95	2.62	2.95	3.73	3.56	3.66	3.80	3.84	3.61	3.55
19	3.22	3.10	2.94	2.58	2.95	3.72	3.53	3.72	3.82	3.82	3.64	3.54
20	3.22	3.09	2.94	2.55	2.99	3.71	3.52	3.76	3.86	3.82	3.64	3.53
21	3.22	3.07	2.93	2.57	3.06	3.68	3.50	3.74	3.85	3.81	3.65	3.52
22	3.22	3.06	2.92	2.66	3.13	3.66	3.48	3.73	3.84	3.80	3.69	3.50
23	3.22	3.05	2.92	2.81	3.14	3.66	3.47	3.75	3.87	3.79	3.67	3.49
24	3.21	3.07	2.91	2.83	3.14	3.65	3.46	3.75	3.89	3.78	3.67	3.55
25	3.21	3.19	2.91	2.80	3.11	3.64	3.45	3.83	3.89	3.78	3.66	3.56
26	3.21	3.25	2.90	2.77	3.08	3.62	3.43	3.89	3.88	3.76	3.66	3.56
27	3.20	3.23	2.90	2.73	3.05	3.60	3.42	3.85	3.87	3.75	3.65	3.57
28	3.21	3.21	2.89	2.69	3.11	3.59	3.44	3.81	3.86	3.73	3.65	3.56
29	3.20	3.19	2.88	2.66	3.38	3.59	3.48	3.79	3.86	3.71	3.64	3.55
30	3.20	—	2.88	2.60	3.45	3.57	3.49	3.79	3.83	3.70	3.63	3.54
31	3.19	—	2.87	—	3.54	—	3.50	3.81	—	3.69	—	3.54
$\overline{X}$	3.24	3.15	2.97	2.75	2.95	3.71	3.54	3.70	3.84	3.83	3.63	3.57
MAX	3.27	3.25	3.16	2.88	3.54	3.86	3.70	3.89	3.94	3.95	3.69	3.65
MIN	3.19	3.05	2.87	2.55	2.67	3.57	3.42	3.50	3.78	3.69	3.58	3.49

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(Rev. 7-67)

UNITED STATES DEPARTMENT OF T

GE OGICAL SURVEY (WATER RESOURCES DIV

P. Rose

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P-37 1976 WATER LEVELS

DAY	JAN	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1	0.84	0.71	0.86	-0.21	0.57	1.32	1.67	1.25	1.74	1.87	1.25	0.99
2	0.82	0.74	0.83	-0.24	0.93	1.27	1.64	1.29	1.72	1.89	1.24	0.98
3	0.81	0.71	0.79	-0.29	1.02	1.24	1.60	1.32	1.69	1.85	1.29	0.96
4	0.80	0.69	0.75	-0.33	1.06	1.27	1.57	1.35	1.68	1.80	1.28	0.94
5	0.78	0.67	0.72	-0.38	1.00	1.29	1.55	1.56	1.66	1.76	1.26	0.92
6	0.78	0.66	0.69	0.17	0.95	1.29	1.53	1.37	1.65	1.73	1.23	0.92
7	0.77	0.64	0.66	0.64	0.93	1.29	1.50	1.35	1.65	1.70	1.22	0.91
8	0.76	0.61	0.63	0.65	0.87	1.33	1.49	1.35	1.63	1.67	1.20	0.91
9	0.73	0.58	0.60	0.61	0.84	1.45	1.53	1.36	1.62	1.69	1.19	0.90
10	0.71	0.56	0.57	0.54	0.80	1.82	1.61	1.44	1.61	1.71	1.17	0.86
11	0.70	0.54	0.53	0.47	0.75	2.00	1.59	1.48	1.63	1.68	1.17	0.84
12	0.69	0.53	0.50	0.40	0.72	1.99	1.57	1.51	1.65	1.64	1.16	0.85
13	0.68	0.51	0.47	0.33	0.68	1.97	1.55	1.49	1.67	1.60	1.16	0.82
14	0.67	0.49	0.43	0.35	0.63	1.95	1.52	1.45	1.67	1.58	1.16	0.85
15	0.74	0.47	0.39	0.39	0.62	1.93	1.49	1.45	1.72	1.55	1.15	1.00
16	0.92	0.45	0.36	0.31	0.97	1.90	1.35	1.46	1.73	1.53	1.15	1.00
17	0.91	0.43	0.34	0.23	0.94	1.86	1.33	1.50	1.71	1.51	1.14	1.05
18	0.88	0.42	0.29	0.15	0.90	1.84	1.30	1.60	1.69	1.50	1.14	1.06
19	0.86	0.40	0.25	0.09	0.89	1.81	1.27	1.70	1.72	1.48	1.16	1.04
20	0.84	0.38	0.22	0.47	0.93	1.79	1.24	1.72	1.85	1.46	1.23	1.02
21	0.83	0.36	0.18	1.02	0.95	1.75	1.24	1.75	1.91	1.45	1.22	1.06
22	0.81	0.35	0.15	0.97	1.11	[illegible]	1.26	1.76	1.85	1.42	1.22	1.14
23	0.79	0.33	0.13	0.95	1.26	[illegible]	1.25	1.77	1.80	1.40	1.22	1.12
24	0.77	0.35	0.10	0.90	1.30	1.80	1.23	1.78	1.80	1.38	1.21	1.11
25	0.75	0.76	0.06	0.84	1.25	1.80	1.20	1.80	1.87	1.36	1.21	1.11
26	0.73	0.80	0.03	0.79	1.19	1.80	1.17	1.81	1.87	1.36	1.20	1.09
27	0.71	0.82	0.01	[illegible]	1.15	1.78	1.14	1.82	1.83	1.35	1.20	1.07
28	0.74	0.91	-0.04	0.66	1.15	1.74	1.10	1.83	1.80	1.33	1.19	1.05
29	[illegible]	0.88	-0.08	[illegible]	1.38	1.72	1.08	1.81	[illegible]	1.30	1.19	1.05
30	[illegible]		-0.12	0.49	1.39	1.69	1.15	1.78	1.80	1.28	—	1.03
31	[illegible]		-0.16	—	1.36	—	1.20	1.76	—	1.27	—	1.01
x̄	[illegible]	0.58	0.36	0.41			1.38	1.57		1.55	1.20	0.99
MAX	[illegible]	0.91	0.86	1.02			1.67	[illegible]		1.89	1.29	1.14
MIN	[illegible]	0.33	-0.16	-0.38			1.08	1.25		1.27	1.14	0.82

9-230 b
(Rev. 7-67)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY (WATER RESOURCES DIVISION)

Station Number P. Rose

P-38 1976 WATER LEVELS

DAY	JAN	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1	0.90	0.60	0.61	-0.38	-0.02	1.60	1.80	1.60	1.95	1.95	1.43	1.14
2	0.89	0.67	0.57	-0.43	0.43	1.58	1.75	1.71	1.93	1.95	1.42	1.14
3	0.87	0.64	0.54	-0.48	0.64	1.67	1.71	1.75	1.91	1.92	1.42	1.13
4	0.86	0.62	0.50	-0.53	0.63	1.73	1.67	1.76	1.90	1.88	1.40	1.12
5	0.85	0.60	0.49	-0.57	0.57	1.75	1.63	1.77	1.88	1.85	1.38	1.11
6	0.84	0.58	0.45	-0.39	0.53	1.80	1.59	1.76	1.86	1.82	1.36	1.10
7	0.83	0.56	0.42	0.17	0.48	1.83	1.55	1.75	1.85	1.80	1.35	1.09
8	0.82	0.52	0.39	0.19	0.43	1.87	1.52	1.75	1.85	1.76	1.33	1.08
9	0.79	0.49	0.37	0.11	0.54	1.92	1.52	1.85	1.87	1.76	1.31	1.06
10	0.76	0.45	0.33	0.02	0.85	1.94	1.52	1.86	1.88	1.74	1.30	1.05
11	0.75	0.43	0.29	-0.05	0.84	1.99	1.51	1.85	1.90	1.71	1.29	1.04
12	0.74	0.41	0.24	-0.10	0.83	2.03	1.50	1.83	1.94	1.68	1.28	1.03
13	0.73	0.38	0.20	-0.15	0.81	2.04	1.48	1.80	1.98	1.66	1.28	1.02
14	0.72	0.36	0.16	-0.18	0.79	2.01	1.46	1.77	1.98	1.63	1.27	1.01
15	0.73	0.33	0.12	-0.15	0.80	1.98	1.44	1.76	2.03	1.61	1.26	1.00
16	0.76	0.30	0.08	-0.21	1.26	1.93	1.44	1.75	2.05	1.60	1.25	1.00
17	0.73	0.28	0.22	-0.26	1.32	1.94	1.43	1.76	2.03	1.59	1.24	0.98
18	0.69	0.25	0.17	-0.32	1.40	1.95	1.43	1.80	2.02	1.62	1.23	0.96
19	0.67	0.22	0.09	-0.36	1.38	1.92	1.44	1.84	1.99	1.62	1.22	0.95
20	0.65	0.20	0.03	-0.41	1.41	1.88	1.42	1.92	1.95	1.61	1.21	0.94
21	0.66	0.17	-0.01	-0.44	1.42	1.83	1.40	1.94	1.93	1.60	1.22	0.94
22	0.66	0.17	-0.04	-0.43	1.52	1.80	1.39	1.98	1.94	1.58	1.23	0.92
23	0.63	0.15	-0.08	-0.20	1.51	1.92	1.37	2.00	1.92	1.56	1.21	0.92
24	0.61	0.19	0.01	-0.23	1.49	1.90	1.35	2.02	1.97	1.55	1.20	1.06
25	0.60	0.68	-0.07	-0.31	1.48	1.86	1.33	2.03	2.07	1.53	1.19	1.08
26	0.58	0.69	-0.13	-0.36	1.49	1.82	1.31	2.03	2.07	1.52	1.19	1.10
27	0.57	0.68	-0.17	-0.39	1.47	1.79	1.45	2.04	2.04	1.50	1.18	1.11
28	0.56	0.66	-0.21	-0.44	1.51	1.81	1.52	2.02	2.00	1.49	1.18	1.12
29	0.53	0.64	-0.25	-0.45	1.63	1.85	1.48	2.00	1.96	1.48	1.17	1.12
30	0.50	—	-0.29	-0.50	1.65	1.86	1.48	1.99	1.92	1.46	1.16	1.12
31	0.48	—	-0.34	—	1.65	—	1.50	1.97	—	1.45	—	1.13
X̄	0.71	0.45	0.15	-0.27	1.06	1.86	1.50	1.86	1.95	1.66	1.27	1.05
MAX	0.90	0.69	0.61	0.19	1.65	2.04	1.80	2.04	2.07	1.95	1.43	1.14
MIN	0.48	0.15	-0.34	-0.57	-0.02	1.58	1.31	1.60	1.85	1.45	1.16	0.92

P. Rose

NP-201 1976 WATER LEVELS

DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
5	3.63	3.56	3.42	2.99	2.23	3.64	3.65	3.74	3.65	—	—	—
10	3.61	3.51	3.39	2.62	2.16	3.70	3.64	3.64	3.78	—	—	3.86
15	3.61	3.48	3.34	2.33	2.28	3.61	3.71	3.70	3.95	—	3.94	3.87
20	3.58	3.46	3.26	2.04	2.29	3.61	3.71	3.61	4.05	—	3.90	3.84
25	3.58	3.53	3.25	1.80	—	3.70	3.70	3.60	—	—	3.91	3.65
MONTH END	3.58	3.48	2.98	1.72	3.69	3.64	3.74	3.64	—	—	—	3.86
MEAN	3.60	3.51	3.31	2.27	2.59	3.63	3.69	3.67	3.86	—	3.92	3.81
MAX	3.64	3.58	3.46	3.02	3.74	3.75	3.79	3.78	4.14	—	3.95	3.94
MIN	3.58	3.44	2.98	1.63	1.74	3.35	3.60	3.60	3.60	—	3.89	3.65

NP 202 1976 WATER LEVELS

DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
5	9.11	9.01	8.89	8.48	8.38	9.12	9.14	9.13	9.23	—	—	9.34
10	9.09	9.00	8.81	8.51	8.53	9.03	9.16	—	9.31	—	9.45	9.31
15	9.08	8.94	8.73	8.46	8.59	9.03	9.15	—	9.45	—	9.44	9.30
20	9.06	8.87	8.65	8.40	8.57	—	9.14	—	—	9.57	9.41	9.29
25	9.05	8.92	8.62	8.38	8.58	8.94	9.13	—	—	9.51	—	9.36
MONTH END	9.03	8.93	8.56	8.30	9.07	9.00	9.13	9.21	—	9.43	—	9.35
MEAN	9.07	8.95	8.71	8.42	8.62	9.02	9.14	9.17	9.33	9.50	9.43	9.33
MAX	9.12	9.04	8.93	8.54	9.07	9.20	9.19	9.31	9.52	9.57	9.46	9.37
MIN	9.03	8.82	8.56	8.30	8.30	8.94	9.03	8.83	9.17	9.43	9.41	9.28

NP-203 1976 WATER LEVELS

DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
5	8.51	—	—	—	4.93	6.00	—	—	5.99	6.43	6.10	—
10	5.79	—	—	—	4.94	5.93	—	—	5.98	6.43	6.08	—
15	5.78	—	—	5.10	5.17	5.91	—	—	6.17	6.74	6.13	5.99
20	5.75	—	—	5.01	5.69	5.87	—	—	6.65	6.69	6.09	6.02
25	5.75	—	—	4.97	5.70	—	—	—	6.69	6.19	6.11	5.95
MONTH END	5.73	—	—	4.87	5.84	—	—	6.07	6.75	6.10	6.08	5.95
MEAN	5.77	—	—	4.99	5.38	5.93	—	6.12	6.34	6.43	6.10	5.98
MAX	5.83	—	—	5.13	5.84	6.01	—	6.17	6.75	6.79	6.15	6.02
MIN	5.77	—	—	4.87	4.87	5.83	—	6.07	5.97	6.10	6.08	5.95

T. Rose

NP-204 1976 WATER LEVELS

DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
5	2.69	2.62	—	—	—	3.25	3.00	3.02	3.26	3.26	3.03	2.97
10	2.67	2.60	—	—	2.53	3.34	3.12	3.18	3.29	—	2.97	2.94
15	2.67	2.57	—	—	2.60	3.29	3.10	3.17	3.37	—	2.98	3.04
20	2.65	2.55	—	—	2.62	3.21	3.00	3.26	3.29	3.23	2.98	2.94
25	2.64	2.66	—	2.13	2.64	3.14	2.92	3.31	—	3.17	3.03	2.97
MONTH END	2.63	2.64	—	2.14	3.07	3.06	2.94	3.28	3.26	3.09	3.01	2.94
MEAN	2.66	2.61	—	2.13	2.69	3.22	3.01	3.20	3.29	3.19	3.00	2.97
MAX	2.69	2.66	—	2.25	3.07	3.36	3.76	3.32	3.49	3.29	3.07	4.93
MIN	2.63	2.52	—	1.99	2.36	3.06	2.91	2.95	3.26	3.09	2.96	2.91

NP-205 1976 WATER LEVELS

DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
5	—	3.63	—	2.49	4.61	5.19	4.80	4.85	4.93	5.16	—	4.94
10	4.36	3.42	—	2.85	4.75	4.97	5.09	5.07	5.07	5.14	—	4.82
15	4.26	3.21	—	2.50	—	—	4.89	4.92	5.08	5.01	4.98	4.72
20	4.04	2.99	—	2.23	—	—	4.85	—	5.04	—	4.98	4.65
25	3.86	3.62	—	2.08	—	4.77	4.82	—	4.91	—	5.00	4.76
MONTH END	3.67	—	—	3.11	4.94	4.82	4.81	5.00	5.14	—	4.97	4.71
MEAN	4.04	3.37	—	2.54	4.70	4.95	4.89	4.96	5.02	5.14	4.96	4.78
MAX	4.38	3.79	—	3.20	5.05	5.19	5.14	5.11	5.19	5.23	5.05	4.96
MIN	3.67	2.84	—	2.02	4.13	4.73	4.75	4.80	4.81	5.01	4.80	4.65

NP-206 1976 WATER LEVELS

DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
5	—	—	—	2.87	8.81	12.36	12.11	—	12.23	12.27	—	11.12
10	7.89	—	—	2.89	9.14	12.40	12.22	—	12.15	12.22	—	10.72
15	7.78	—	—	2.75	—	12.32	12.07	—	12.24	12.14	11.59	10.44
20	7.60	—	—	2.50	--	—	12.04	—	12.40	12.20	11.73	—
25	7.50	—	—	2.28	—	12.20	—	—	—	—	11.68	—
MONTH END	7.39	—	—	6.94	—	12.20	—	12.21	12.24	—	11.44	—
MEAN	7.64	—	—	3.69	9.05	12.30	12.12	12.16	12.26	12.21	11.63	10.79
MAX	7.93	—	—	7.01	11.36	12.51	12.29	12.21	12.40	12.35	11.87	11.37
MIN	7.39	—	—	2.26	6.91	12.12	12.01	12.10	12.15	12.09	11.44	10.28

P. ROSE

NP-207 1976 WATER LEVELS

DAY	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
5	10.76	—	—	—	11.00	—	11.41	—	—	—	11.23	—
10	10.68	—	—	—	10.76	—	11.47	—	—	—	11.15	—
15	10.90	—	—	10.34	10.82	—	11.34	—	—	—	11.13	—
20	10.81	—	—	11.08	10.92	—	11.20	—	—	11.43	11.10	—
25	10.72	—	—	10.82	—	11.67	11.16	—	—	11.33	11.08	
MONTH END	10.66	—	—	10.44	—	11.55	11.12	—	—	11.23	—	—
MEAN	10.76	—	—	10.64	10.89	11.61	11.29	—	—	11.33	11.15	—
MAX	10.91	—	—	11.08	11.31	11.67	11.53	—	—	11.43	11.26	—
MIN	10.65	—	—	10.10	10.55	11.55	11.09	—	—	11.23	11.07	—

[illegible]

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY (WATER RESOURCES DIVISION)

Station Number P. Rose

TAMIAMI CANAL OUTLETS, 40-MILE BEND TO MONROE, 1976 WATER LEVELS
(02288900)

DAY	JAN	FEB	MAR	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1	6.22	5.40	6.13	4.57	4.79	7.81	8.25	8.09	8.25	8.36	7.65	7.09
2	6.20	5.45	6.11	4.50	4.77	7.80	8.23	8.06	8.24	8.36	7.63	7.08
3	6.17	5.45	6.04	4.45	5.13	7.94	8.20	8.07	8.26	8.34	7.66	7.05
4	6.14	5.40	5.98	4.40	5.92	8.11	8.17	8.14	8.26	8.32	7.64	7.01
5	6.11	5.37	5.92	4.35	5.87	8.14	8.14	8.16	8.25	8.29	7.60	6.99
6	6.09	5.35	5.86	4.40	5.78	8.12	8.12	8.18	8.26	8.27	7.56	6.97
7	6.07	5.33	5.87	4.49	5.67	8.08	8.10	8.25	8.26	8.26	7.53	6.95
8	6.05	5.29	5.94	4.50	5.56	8.09	8.14	8.26	8.24	8.25	7.50	6.92
9	6.03	5.25	5.93	4.46	5.47	8.18	8.19	8.24	8.23	8.23	7.45	6.87
10	6.01	5.20	5.85	4.38	5.56	8.21	8.22	8.21	8.20	8.20	7.43	6.84
11	5.99	5.17	5.77	4.32	6.12	8.28	8.26	8.18	8.17	8.16	7.40	6.83
12	5.97	5.14	5.69	4.28	6.18	8.31	8.26	8.16	8.17	8.13	7.39	6.81
13	5.97	5.11	5.62	4.24	6.39	8.35	8.25	8.14	8.35	8.11	7.39	6.79
14	5.96	5.08	5.55	4.20	6.36	8.37	8.23	8.14	8.32	8.08	7.36	6.77
15	5.95	5.05	5.49	4.17	6.31	8.40	8.21	8.17	8.37	8.05	7.34	6.75
16	5.93	5.02	5.42	4.13	6.64	8.40	8.19	8.18	8.45	8.02	7.31	6.73
17	5.89	5.00	5.36	4.08	6.59	8.39	8.19	8.20	8.46	8.00	7.29	6.70
18	5.83	4.98	5.28	4.04	6.57	8.37	8.20	8.27	8.42	7.98	7.27	6.66
19	5.78	4.95	5.21	4.01	6.46	8.37	8.18	8.32	8.39	7.95	7.25	6.63
20	5.75	4.92	5.14	4.03	6.36	8.39	8.15	8.35	8.36	7.94	7.23	6.61
21	5.73	4.90	5.07	4.67	6.38	8.37	8.11	8.36	8.37	7.91	7.28	6.80
22	5.70	4.88	5.02	5.01	6.65	8.34	8.10	8.38	8.37	7.88	7.38	6.78
23	5.67	4.85	5.05	5.07	7.07	8.34	8.10	8.39	8.36	7.85	7.32	6.79
24	5.63	4.82	5.03	5.04	7.17	8.32	8.08	8.45	8.36	7.83	7.28	7.31
25	5.60	5.30	4.97	5.23	7.04	8.30	8.07	8.43	8.39	7.81	7.24	7.33
26	5.57	5.93	4.91	5.19	6.94	8.32	8.03	8.41	8.38	7.79	7.21	7.31
27	5.54	5.92	4.85	5.09	6.84	8.36	7.99	8.38	8.37	7.77	7.20	7.26
28	5.52	5.92	4.79	4.99	7.02	8.33	8.01	8.35	8.35	7.74	7.18	7.23
29	5.49	6.12	4.73	4.91	7.57	8.30	8.14	8.32	8.34	7.72	7.16	7.23
30	5.45	—	4.67	4.84	7.69	8.27	8.14	8.28	8.31	7.70	7.13	7.21
31	5.41	—	4.62	—	7.82	—	8.12	8.28	—	7.68	—	7.19
$\bar{X}$	5.85	5.26	5.42	4.53	6.34	8.25	8.15	8.25	8.32	8.03	7.38	6.95
MAX	6.22	6.12	6.13	5.23	7.82	8.40	8.26	8.45	8.46	8.36	7.66	7.33
MIN	5.41	4.82	4.62	4.01	4.77	7.80	7.99	8.06	8.17	7.68	7.13	6.61

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(Rev. 7-67)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY (WATER RESOURCES DIVISION)

Station Number P. ROSE

TAMIAMI CANAL at 40 MILE BEND (02288990) 1976 WATER LEVELS

DAY	JAN	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1	8.11	7.94	7.95	7.09	6.28	8.06	8.31	8.29	8.55	—	8.40	8.29
2	8.10	7.97	7.94	7.04	6.64	8.06	8.30	8.30	8.55	—	8.39	8.28
3	8.09	7.96	7.92	6.98	6.98	8.09	8.29	8.32	8.57	—	8.41	8.27
4	8.09	7.95	7.91	6.93	7.20	8.16	8.29	8.32	8.57	8.62	8.41	8.26
5	8.08	7.94	7.89	6.88	7.18	8.22	8.28	8.32	8.56	8.62	8.40	8.26
6	8.08	7.94	7.88	6.93	7.12	8.22	8.28	8.32	8.58	8.62	8.39	8.25
7	8.07	7.95	7.87	7.10	7.06	8.21	8.31	8.35	8.61	8.61	8.39	8.25
8	8.07	7.93	7.86	7.09	7.00	8.21	8.34	8.33	8.61	8.60	8.39	8.24
9	8.07	7.92	7.84	7.06	6.95	8.21	8.33	8.33	8.60	8.59	8.37	8.22
10	8.05	7.90	7.83	6.98	6.92	8.22	8.34	8.33	8.59	9.58	8.37	8.22
11	8.05	7.89	7.81	6.91	6.92	8.24	8.36	8.34	8.60	8.58	8.36	8.22
12	8.05	7.89	7.78	6.86	6.96	8.26	8.35	8.34	8.63	8.56	8.37	8.20
13	8.04	7.88	7.76	6.80	7.09	8.27	8.35	8.34	8.61	8.55	8.39	8.20
14	8.04	7.87	7.74	6.75	7.12	8.26	8.34	8.35	8.59	8.55	8.37	8.20
15	8.04	7.86	7.71	6.71	7.12	8.27	8.34	8.36	8.59	8.54	8.36	8.20
16	8.04	7.85	7.68	6.66	7.42	8.27	8.33	8.35	8.60	8.52	8.36	8.20
17	8.04	7.83	7.68	6.61	7.46	8.28	8.33	8.39	8.63	8.52	8.35	8.20
18	8.02	7.82	7.64	6.56	7.49	8.29	8.33	8.40	8.62	8.51	8.34	8.19
19	8.01	7.81	7.60	6.51	7.46	8.32	8.32	8.49	8.64	8.50	8.34	8.18
20	8.01	7.80	7.56	6.46	7.41	8.36	8.32	8.51	8.64	8.50	8.34	8.18
21	8.01	7.78	7.52	6.42	7.44	8.34	8.31	8.54	8.63	8.49	8.34	8.20
22	8.01	7.77	7.50	6.39	7.60	8.33	8.31	8.57	8.63	8.48	8.34	8.19
23	8.00	7.76	7.52	6.35	7.69	8.33	8.31	8.56	8.62	8.47	8.34	8.19
24	7.99	7.74	7.47	6.31	7.74	8.32	8.31	8.61	8.62	8.46	8.33	8.24
25	7.98	7.91	7.41	6.26	7.69	8.34	8.30	8.60	8.62	8.45	8.32	8.25
26	7.98	7.94	7.37	6.22	7.64	8.35	8.29	8.58	8.63	8.45	8.31	8.25
27	7.97	7.93	7.32	6.18	7.57	8.34	8.29	8.57	8.62	8.44	8.31	8.25
28	7.98	7.92	7.28	6.18	7.72	8.33	8.29	8.56	8.62	8.43	8.29	8.24
29	7.97	7.96	7.23	6.18	8.01	8.32	8.29	8.55	8.61	8.42	8.29	8.24
30	7.95	—	7.18	6.14	7.98	8.31	8.29	8.55	8.60	8.41	8.29	8.24
31	7.95	—	7.13	—	7.99	—	8.29	8.55	—	8.40	—	8.22
$\bar{x}$	8.03	7.88	7.64	6.65	7.32	8.26	8.31	8.43	8.60	8.52	8.36	8.23
MAX	8.11	7.97	7.95	7.10	8.01	8.36	8.36	8.61	8.64	8.62	8.41	8.29
MIN	7.95	7.74	7.13	6.14	6.28	8.06	8.28	8.29	8.55	8.40	8.29	8.18

9-230 D
(Rev. 7-67)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY (WATER RESOURCES DIVISION)

Station Number P. ROSE

TAMIAMI CANAL OUTLETS, MONROE TO CARNESTOWN (02288800) 1976 WATER LEVELS

DAY	JAN	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1	1.25	0.64	1.39	0.78	0.81	2.27	3.39	3.31	2.92	3.36	1.95	1.65
2	1.15	0.61	1.41	0.67	1.10	2.23	3.36	3.40	2.83	3.33	1.93	1.64
3	1.12	0.59	1.35	0.49	1.34	2.28	3.26	3.54	2.79	3.22	1.94	1.63
4	1.12	0.56	1.28	0.52	1.53	2.53	3.12	3.61	2.77	3.10	1.92	1.57
5	1.01	0.53	1.30	0.61	1.39	2.81	3.06	3.62	2.73	3.10	2.04	1.54
6	0.96	0.51	1.51	0.90	1.26	2.98	3.39	3.63	2.63	3.07	2.00	1.53
7	0.94	0.49	1.55	1.14	1.16	3.07	3.45	3.68	2.57	2.96	1.81	1.55
8	0.99	0.47	1.55	1.14	1.13	3.19	3.43	3.54	2.58	2.93	1.95	1.55
9	0.90	0.45	1.51	1.03	1.12	3.35	3.61	3.41	2.55	2.94	1.74	1.46
10	0.73	0.43	1.46	0.76	1.20	3.43	3.51	3.33	2.44	2.96	1.73	1.38
11	0.69	0.40	1.36	0.70	1.42	3.62	3.37	3.38	2.40	2.94	1.72	1.39
12	0.71	0.49	1.24	0.79	1.39	3.66	3.26	3.39	2.42	2.88	1.71	1.42
13	0.70	0.51	1.18	0.82	1.41	3.61	3.17	3.32	2.56	2.78	1.70	1.42
14	0.73	0.54	1.16	0.83	1.56	3.52	3.10	3.27	2.54	2.68	1.85	1.46
15	0.82	0.55	1.15	0.80	1.55	3.42	3.04	3.32	2.35	2.60	2.01	1.65
16	0.88	0.56	1.20	0.70	1.70	3.37	3.06	3.37	2.53	2.51	1.66	1.63
17	1.00	0.63	1.20	0.64	1.70	3.28	3.20	3.36	2.57	2.48	1.64	1.58
18	0.92	0.71	1.07	0.61	1.64	3.23	3.03	3.47	2.76	2.52	1.64	1.51
19	0.71	0.69	0.96	0.56	1.57	3.10	2.84	3.56	2.96	2.47	1.66	1.45
20	0.63	0.61	0.96	0.61	1.57	3.03	2.65	3.58	3.08	2.41	—	1.45
21	0.70	0.57	0.94	0.93	1.70	2.97	2.53	3.58	3.12	2.36	—	1.66
22	0.75	0.61	0.90	0.91	1.75	2.96	2.77	3.58	3.14	2.64	1.69	1.61
23	0.68	0.48	0.85	0.80	1.94	3.00	3.09	3.58	3.18	2.23	1.64	1.62
24	0.69	0.24	0.66	0.76	1.99	3.03	3.29	3.51	3.27	2.18	1.59	1.94
25	0.78	0.56	0.59	0.79	1.95	3.08	3.23	3.44	3.49	—	1.57	1.91
26	0.86	0.68	0.63	0.84	1.92	3.10	3.17	3.36	3.46	—	1.53	1.96
27	0.89	0.77	0.72	0.79	1.83	3.05	3.13	3.27	3.38	2.12	1.55	1.95
28	0.87	0.86	0.78	0.76	2.03	3.04	3.01	3.16	3.40	2.08	1.53	1.93
29	0.70	1.35	0.76	0.66	2.73	3.15	3.03	3.05	3.30	2.04	1.52	1.93
30	0.68	—	0.74	0.49	2.57	3.30	3.18	2.93	3.21	2.01	1.53	1.90
31	0.66	—	0.76	—	2.37	—	3.26	2.87	—	1.99	—	1.90
$\bar{x}$	0.85	0.59	1.10	0.76	1.62	3.09	3.16	3.40	2.86	2.65	1.63	1.64
MAX	1.25	1.35	1.55	1.14	2.73	3.66	3.61	3.68	3.49	3.36	2.04	1.96
MIN	0.63	0.24	0.59	0.49	0.81	2.23	2.53	2.87	2.35	1.99	1.52	1.38

9-230 b
(Rev. 7-67)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY (WATER RESOURCES DIVISION)

Station Number P. Rose

TAMIAMI CANAL OUTLETS: LEVEE 30 to LEVEE 67A - 1976 WATER LEVELS
(02289060)

DAY	JAN	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1	6.57	6.39	6.39	5.55	4.56	6.36	6.75	6.56	6.96	6.98	6.73	6.69
2	6.56	6.39	6.37	5.49	4.65	6.36	6.73	6.57	6.96	6.98	6.73	6.69
3	6.55	6.38	6.35	5.44	4.90	6.44	6.71	6.59	6.96	6.97	6.86	6.68
4	6.55	6.36	6.34	5.39	5.08	6.52	6.70	6.60	6.96	6.95	6.84	6.67
5	6.54	6.35	6.33	5.33	5.01	6.58	6.68	6.62	6.96	6.95	6.83	6.66
6	6.54	6.34	6.31	5.41	4.95	6.61	6.66	6.66	6.96	6.94	6.81	6.66
7	6.54	6.34	6.30	5.58	4.88	6.61	6.65	6.75	6.97	6.93	6.81	6.66
8	6.53	6.32	6.28	5.51	4.86	6.60	6.64	6.77	7.00	6.92	6.79	6.66
9	6.52	6.30	6.27	5.44	4.87	6.61	6.63	6.76	7.02	6.92	6.78	6.64
10	6.51	6.28	6.25	5.35	4.87	6.63	6.63	6.76	7.00	6.91	6.78	6.63
11	6.51	6.27	6.23	5.28	5.05	6.68	6.63	6.76	7.00	6.89	6.77	6.63
12	6.50	6.25	6.20	5.23	5.08	6.68	6.62	6.75	7.02	6.88	6.77	6.62
13	6.49	6.24	6.18	5.17	5.15	6.69	6.66	6.75	7.03	6.87	6.78	6.61
14	6.50	6.22	6.16	5.16	5.17	6.68	6.65	6.74	7.02	6.86	6.77	6.61
15	6.49	6.21	6.13	5.17	5.15	6.69	6.64	6.73	7.03	6.86	6.77	6.61
16	6.49	6.19	6.11	5.16	5.55	6.70	6.63	6.75	7.06	6.85	6.76	6.60
17	6.49	6.17	6.11	5.05	5.54	6.71	6.66	6.76	7.06	6.84	6.76	6.59
18	6.46	6.15	6.08	5.00	5.61	6.72	6.62	6.75	7.05	6.84	6.75	6.58
19	6.45	6.14	6.04	4.95	5.56	6.75	6.64	6.92	7.07	6.83	6.75	6.57
20	6.44	6.12	6.01	4.93	5.53	6.78	6.63	6.93	7.06	6.83	6.74	6.56
21	6.44	6.09	5.97	4.92	5.57	6.76	6.62	6.92	7.06	6.82	6.76	6.57
22	6.44	6.08	5.94	4.87	5.72	6.75	6.66	6.93	7.03	6.81	6.77	6.56
23	6.43	6.04	5.93	4.82	5.75	6.75	6.63	6.94	6.98	6.80	6.75	6.55
24	6.42	6.02	5.88	4.77	5.76	6.74	6.62	7.01	7.04	6.79	6.74	6.60
25	6.41	6.20	5.84	4.72	5.69	6.75	6.60	7.00	7.04	6.79	6.73	6.59
26	6.41	6.30	5.80	4.67	5.64	6.76	6.63	6.98	7.02	6.78	6.73	6.59
27	6.40	6.41	5.76	4.63	5.65	6.74	6.63	6.97	7.01	6.77	6.73	6.58
28	6.40	6.40	5.73	4.66	6.00	6.72	6.63	6.96	7.00	6.76	6.72	6.57
29	6.38	6.40	5.68	4.62	6.38	6.69	6.61	6.94	6.98	6.75	6.72	6.57
30	6.38	—	5.63	4.57	6.36	6.68	6.59	6.92	6.98	6.75	6.71	6.56
31	6.37	—	5.59	—	6.36	—	6.57	6.93	—	6.74	—	6.56
$\overline{X}$	6.91	6.78	6.63	6.47	6.25	6.07	5.09	6.81	7.01	6.86	6.76	6.61
MAX	6.99	6.86	6.70	6.57	6.41	6.39	5.58	7.01	7.07	6.98	6.86	6.69
MIN	6.85	6.70	6.56	6.37	6.02	5.59	4.57	6.56	6.96	6.74	6.71	6.55

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Rev. 7-67

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY (WATER RESOURCES DIVISION)

Station Number P. ROSE

TAMIAMI CANAL OUTLETS: LEVEE 67A to 40 MILE BEND - 1976 WATER LEVELS
(02289040)

DAY	JAN	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1	9.08	8.55	8.42	7.90	7.45	8.46	9.52	9.64	10.16	10.16	9.95	9.57
2	9.08	8.58	8.41	7.91	7.54	8.46	9.52	9.64	10.15	10.15	9.96	9.55
3	9.06	8.60	8.38	7.86	7.64	8.52	9.52	9.65	10.17	10.13	10.01	9.55
4	9.04	8.58	8.39	7.83	7.74	8.58	9.52	9.66	10.17	10.11	10.00	9.54
5	9.03	8.56	8.37	7.81	7.74	8.63	9.52	9.69	10.16	10.11	9.96	9.53
6	9.01	8.56	8.36	7.80	7.69	8.68	9.52	9.68	10.16	10.08	9.98	9.52
7	8.99	8.55	8.33	7.86	7.66	8.69	9.52	9.76	10.18	10.06	9.96	9.47
8	8.96	8.53	8.36	7.81	7.63	8.73	9.60	9.76	10.22	10.09	9.95	9.45
9	8.97	8.52	8.32	7.86	7.63	8.77	9.63	9.76	10.23	10.14	9.93	9.45
10	8.97	8.50	8.31	7.83	7.70	8.80	9.66	9.79	10.19	10.21	9.89	9.44
11	8.92	8.47	8.31	7.78	7.80	8.84	9.69	9.88	10.22	10.23	9.88	9.42
12	8.90	8.46	8.31	7.74	7.83	8.91	9.69	9.85	10.28	10.24	9.87	9.41
13	8.70	8.45	8.30	7.64	7.84	8.98	9.71	9.85	10.28	10.23	9.88	9.40
14	8.88	8.44	8.28	7.58	7.84	9.00	9.70	9.85	10.27	10.22	9.86	9.39
15	8.88	8.41	8.25	7.58	7.84	9.02	9.69	9.86	10.29	10.19	9.82	9.38
16	8.86	8.40	8.17	7.61	7.96	9.04	9.68	9.87	10.31	10.17	9.81	9.34
17	8.84	8.35	8.22	7.62	7.98	9.06	9.67	9.83	10.31	10.17	9.81	9.32
18	8.83	8.33	8.23	7.62	8.00	9.08	9.67	9.84	10.31	10.16	9.78	9.32
19	8.83	8.33	8.19	7.60	8.02	9.17	9.63	9.95	10.32	10.15	9.77	9.32
20	8.83	8.32	8.14	7.60	8.04	9.21	9.62	10.01	10.32	10.14	9.75	9.30
21	8.80	8.31	8.14	7.54	8.08	9.24	9.62	10.01	10.26	10.14	9.73	9.28
22	8.79	8.28	8.12	7.53	8.10	9.26	9.62	10.02	10.21	10.14	9.75	9.28
23	8.78	8.24	8.14	7.49	8.13	9.29	9.62	10.03	10.20	10.12	9.75	9.28
24	8.75	8.29	8.14	7.48	8.16	9.31	9.62	10.15	10.17	10.09	9.69	9.34
25	8.71	8.30	8.12	7.42	8.17	9.35	9.56	10.14	10.18	10.05	9.68	9.34
26	8.68	8.37	8.08	7.40	8.19	9.36	9.58	10.14	10.18	10.05	9.66	9.32
27	8.66	8.37	8.04	7.39	8.20	9.40	9.62	10.17	10.20	10.04	9.62	9.31
28	8.67	8.38	8.02	7.38	8.30	9.46	9.62	10.17	10.20	10.05	9.62	9.30
29	8.66	8.39	8.00	7.41	8.44	9.51	9.64	10.16	10.18	10.04	9.58	9.28
30	8.60	—	7.95	7.42	8.41	9.50	9.67	10.17	10.16	9.99	9.57	9.27
31	8.59	—	7.93	—	8.42	—	9.66	10.16	—	9.95	—	9.27
$\bar{x}$	8.86	8.43	8.22	7.64	7.94	9.01	9.62	9.91	10.22	10.12	9.82	9.39
MAX	9.08	8.60	8.42	7.91	8.44	9.51	9.71	10.17	10.32	10.24	10.01	9.57
MIN	8.59	8.24	7.93	7.38	7.45	8.46	9.52	9.64	10.15	9.95	9.57	9.27

HYDROLOGIC STATION
PERIOD OF RECORD
MAXIMUMS, MINIMUMS
MEANS AND YEAR

P-33 WATER LEVEL

Month	Mean	Max.	Year	Min.	Year
Jan.	5.90	7.28	1970	5.15	1957
Feb.	5.78	7.11	1970	4.68	1962
Mar.	5.63	7.02	1970	4.07	1963
Apr.	5.29	6.99	1970	2.80	1962
May	4.90	7.17	1958	2.25	1963
Jun.	5.68	7.18	1969	3.57	1965
Jul.	6.05	7.16	1969	4.27	1965
Aug.	6.15	7.30	1969	4.83	1956
Sept.	6.29	7.31	1969	5.27	1965
Oct.	6.33	7.67	1969	5.42	1956
Nov.	6.24	7.67	1960	5.52	1963
Dec.	6.04	7.40	1969	5.35	1961

Period of Record: 1953 to Present

P-34 WATER LEVEL

Jan.	1.65	3.03	1970	0.34	1956
Feb.	1.33	2.69	1970	0.00	1965
Mar.	0.76	2.61	1970	-1.12	1975
Apr.	0.14	2.37	1958	-2.31	1971
May	0.44	3.20	1958	-2.75	1971
Jun.	1.75	3.12	1969	-1.96	1965
Jul.	2.08	2.90	1969	0.26	1965
Aug.	2.10	2.91	1969	1.23	1956
Sept.	2.24	3.31	1960	1.35	1975
Oct.	2.26	3.39	1969	1.38	1974
Nov.	2.06	3.40	1969	0.88	1974
Dec.	1.85	3.10	1969	0.75	1956

Period of Record: 1953 to Present

P-35 WATER LEVEL

Month	Mean	Max.	Year	Min.	Year
Jan.	1.40	2.72	1970	0.08	1957
Feb.	1.28	2.47	1970	0.01	1964
Mar.	1.16	2.53	1958	0.06	1964
Apr.	1.13	2.52	1958	-0.27	1964
May	1.33	2.73	1958	0.24	1965
Jun.	1.84	3.05	1969	0.57	1965
Jul.	1.92	2.82	1970	0.45	1964
Aug.	1.97	2.85	1969	0.73	1964
Sept.	2.13	3.47	1960	1.20	1955
Oct.	2.19	3.11	1970	1.07	1961
Nov.	1.96	3.13	1969	0.85	1956
Dec.	1.63	2.74	1960	0.20	1955

Period of Record: September 1953 to Present

P-36 WATER LEVEL

Jan.	3.53	4.58	1970	3.20	1976
Feb.	3.38	4.37	1970	2.92	1968
Mar.	3.21	4.35	1970	2.29	1971
Apr.	2.83	4.13	1970	1.02	1971
May	2.62	4.20	1970	0.79	1971
Jun.	3.19	4.38	1970	0.85	1971
Jul.	3.65	4.50	1970	2.89	1975
Aug.	3.73	4.39	1969	3.26	1975
Sept.	3.83	4.75	1969	3.21	1975
Oct.	3.91	4.91	1969	3.48	1971
Nov.	3.79	4.87	1969	3.51	1974, 1973
Dec.	3.66	4.63	1969	3.46	1968

Period of Record: February 1968 to Present

P-37 WATER LEVEL

Month	Mean	Max.	Year	Min.	Year
Jan.	0.98	1.68	1960	0.15	1973
Feb.	0.83	1.47	1953	-0.23	1962
Mar.	0.50	1.30	1954	-0.96	1956
Apr.	-0.10	1.51	1956	-1.75	1971
May	-0.01	1.59	1968	-1.97	1971
Jun	1.04	2.36	1969	-1.76	1965
Jul.	1.29	2.14	1966	-0.37	1965
Aug.	1.31	2.18	1959	-0.11	1956
Sept.	1.56	3.01	1960	0.92	1961
Oct.	1.63	2.35	1961	0.94	1971
Nov.	1.40	2.23	1961	0.92	1974
Dec.	1.14	1.89	1960	0.61	1956

Period of Record: 1953 to Present

P-38 WATER LEVEL

Jan.	1.26	2.13	1970	0.05	1957
Feb.	1.07	2.00	1970	-0.34	1957
Mar.	0.66	1.89	1958	-0.60	1956
Apr.	0.19	2.05	1958	-1.33	1971
May	0.36	2.16	1958	-1.45	1971
Jun.	1.47	2.47	1969	-1.43	1965
Jul.	1.69	2.28	1969	0.91	1956
Aug.	1.75	2.19	1965	0.84	1956
Sept.	1.89	2.92	1960	1.16	1961
Oct.	1.89	2.59	1960	1.09	1962
Nov.	1.67	2.42	1960, 1961	0.99	1962
Dec.	1.41	2.27	1960	0.63	1957

Period of Record: 1953 to Present

HEADQUARTERS POND WATER LEVEL

Month	Mean	Max.	Year	Min.	Year
Jan.	1.76	3.00	1970	0.82	1971
Feb.	1.53	2.76	1970	0.56	1975
Mar.	1.02	2.56	1969	-0.32	1975
Apr.	0.58	2.53	1972	-1.16	1971
May	0.68	4.00	1968	-1.54	1971
Jun.	2.47	4.83	1966	-1.02	1971
Jul.	2.92	4.84	1968	1.75	1971
Aug.	2.52	3.99	1966	1.25	1965
Sept.	2.80	4.74	1968	1.60	1965
Oct.	2.92	4.66	1968	2.18	1974
Nov.	2.50	4.12	1969	1.56	1974
Dec.	1.98	2.80	1969	1.22	1970

Period of Record: Sept. 1965 to Present

TAYLOR SLOUGH AT BRIDGE WATER LEVEL

Jan.	2.18	4.13	1961	0.68	1962
Feb.	1.90	3.80	1961	0.16	1962
Mar.	1.30	2.89	1961	-0.41	1962
Apr.	0.65	2.54	1964	-1.24	1971
May	0.68	4.25	1968	-1.67	1971
Jun.	2.88	4.92	1966	-1.13	1965
Jul.	3.65	4.96	1968	0.67	1965
Aug.	3.32	4.64	1966	1.71	1965
Sept.	3.78	5.28	1960	2.00	1965
Oct.	3.95	5.11	1960	2.46	1961
Nov.	3.38	5.10	1960	1.65	1961
Dec.	2.54	4.48	1960	0.77	1961

Period of Record: September 1960 to Present

NP-44 (PINE GLADE LAKE) WATER LEVEL

Month	Mean	Max.	Year	Min.	Year
Jan.	2.49	4.61	1961	0.83	1971
Feb.	2.11	4.39	1969	2.80	1969
Mar.	1.45	3.65	1970	-0.65	1975
Apr.	0.75	2.93	1969	-1.50	1975
May	1.10	4.95	1968	-1.94	1971
Jun.	3.57	5.05	1969	-1.20	1973
Jul.	4.27	5.15	1966	2.50	1967
Aug.	4.13	4.80	1966	2.78	1970
Sept.	4.43	5.20	1968	3.50	1970
Oct.	4.43	5.03	1968	3.51	1975
Nov.	3.67	4.94	1969	2.16	1975
Dec.	2.84	4.28	1969	1.16	1975

Period of Record: 1961 to Present

NP 62 (PA-HAY-OKEE) WATER LEVEL

Jan.	2.32	3.40	1970	1.55	1971
Feb.	2.05	3.23	1970	0.43	1976
Mar.	1.65	3.15	1970	-0.30	1971
Apr.	0.88	2.88	1970	-1.30	1971
May	0.82	3.05	1968	-1.78	1971
Jun.	2.88	3.53	1969	-1.36	1971
Jul.	2.88	3.50	1966	2.18	1967
Aug.	2.90	3.61	1969	2.13	1967
Sept.	3.05	3.88	1968	2.50	1967
Oct.	3.00	3.90	1969	2.55	1964
Nov.	2.81	3.95	1969	2.32	1966
Dec.	2.54	3.52	1969	2.10	1971

Period of Record: 1964 to Present

NP-201 WATER LEVEL

Month	Mean	Max.	Year	Min.	Year
Jan.	3.57	3.64	1976	3.48	1975
Feb.	3.50	3.58	1976	3.44	1976
Mar.	3.34	3.48	1975	2.98	1976
Apr.	2.13	3.05	1975	1.32	1975
May	2.16	3.74	1976	1.08	1975
Jun.	3.48	3.75	1976	2.51	1975
Jul.	3.55	3.79	1976	3.23	1975
Aug.	3.53	3.78	1976	3.28	1975
Sept.	3.74	4.14	1976	3.37	1975
Oct.	4.21	4.32	1975	4.11	1974
Nov.	3.94	4.11	1974	3.85	1974
Dec.	3.80	4.09	1974	3.60	1974

Period of Record: October 1974 to Present

NP-202 WATER LEVEL

Jan.	8.96	9.12	1976	8.69	1975
Feb.	8.77	9.04	1976	8.54	1975
Mar.	8.65	8.93	1976	8.50	1975
Apr.	8.36	8.55	1975	8.03	1975
May	8.40	9.07	1976	7.86	1975
Jun.	8.72	8.16	1975	9.20	1976
Jul.	9.03	9.19	1976	8.74	1975
Aug.	8.97	9.31	1976	8.63	1975
Sept.	9.22	9.52	1976	8.66	1975
Oct.	9.50	9.57	1976	9.43	1976
Nov.	9.43	9.46	1976	9.41	1976
Dec.	9.33	9.37	1976	9.28	1976

Period of Record: October 1974 to Present

NP-205 WATER LEVEL

Month	Mean	Max.	Year	Min.	Year
Jan.	4.33	4.69	1975	3.67	1976
Feb.	3.85	4.50	1975	2.84	1976
Mar.	3.42	2.95	1975	2.70	1975
Apr.	2.10	3.20	1976	1.03	1975
May	3.91	5.05	1976	1.90	1975
Jun.	5.01	5.52	1975	4.20	1975
Jul.	5.08	5.80	1975	4.50	1975
Aug.	4.78	5.11	1976	4.53	1975
Sept.	4.92	5.19	1976	4.56	1975
Oct.	5.18	5.40	1974	4.75	1974
Nov.	5.02	5.24	1974	4.80	1976
Dec.	4.76	4.96	1976	4.65	1976

Period of Record: 1974 to Present

NP-206 WATER LEVEL

Jan.	8.58	10.33	1975	7.39	1976
Feb.	8.26	8.79	1975	7.71	1975
Mar.	7.01	7.66	1975	6.25	1975
Apr.	5.52	6.19	1975	2.28	1976
May	8.41	11.36	1976	4.80	1975
Jun.	11.62	12.51	1976	10.10	1975
Jul.	11.73	12.29	1976	11.14	1975
Aug.	11.84	12.21	1976	11.19	1975
Sept.	11.88	12.40	1976	11.22	1975
Oct.	11.97	12.35	1976	10.94	1974
Nov.	10.92	11.91	1974	9.55	1974
Dec.	11.01	11.91	1974	10.28	1974

Period of Record: 1974 to Present

NP-207 WATER LEVEL

Month	Mean	Max.	Year	Min.	Year
Jan.	10.76	10.91	1976	10.65	1976
Feb.	-	-	-	-	-
Mar.	-	-	-	-	-
Apr.	10.64	11.08	1976	10.10	1976
May	10.89	11.31	1976	10.55	1976
Jun.	11.61	11.67	1976	11.55	1976
Jul.	11.29	11.53	1976	11.09	1976
Aug.	-	11.56	1976	-	-
Sept.	-	-	-	-	-
Oct.	11.33	11.43	1976	11.23	1976
Nov.	11.15	11.26	1976	11.07	1976
Dec.	-	-	-	-	-

Period of Record: 1975 to Present

TAMIAMI CANAL OUTLETS, MONROE TO CARNESTOWN
(02288800)

Month	Mean	Max	Year	Min.	Year
Jan.	1.48	4.56	1963	-0.05	1965
Feb.	1.63	5.35	1963	0.09	1965
Mar.	1.54	4.43	1963	-0.03	1965
Apr.	1.22	4.38	1963	0.05	1971
May	1.34	4.52	1963	0.19	1971
Jun.	2.27	5.00	1969	0.47	1965
Jul.	2.81	5.24	1964	1.11	1965
Aug.	2.98	5.30	1964	1.60	1972
Sept.	3.28	6.07	1963	1.85	1965
Oct.	3.01	6.16	1962	1.75	1964
Nov.	2.46	5.14	1962	1.48	1964
Dec.	2.08	4.74	1962	0.71	1964

Period of Record: August 1960 to Present

TAMIAMI CANAL AT BRIDGE 77 NEAR CARNESTOWN
(02288780)

Jan.	0.88	1.75	1968	-0.60	1976
Feb.	0.81	1.69	1970	-0.62	1976
Mar.	0.98	2.66	1970	-0.38	1976
Apr.	0.90	2.22	1970	-0.11	1971
May	1.01	1.73	1970	0.21	1970
Jun.	1.58	3.04	1969	0.41	1971
Jul.	1.80	2.66	1970	0.78	1971
Aug.	2.05	2.58	1973	1.11	1971
Sept.	2.23	2.96	1973	1.70	1969
Oct.	2.04	2.85	1969	1.33	1972
Nov.	1.63	2.42	1971	0.57	1970
Dec.	1.11	1.93	1969	-0.42	1972

Period of Record: August 1960 to Present

TAMIAMI CANAL OUTLETS, 40 MILE BEND TO MONROE
(02288900)

Month	Mean	Max.	Year	Min.	Year
Jan.	6.99	8.21	1970	5.58	1971
Feb.	6.60	8.09	1970	4.58	1975
Mar.	6.14	8.52	1970	3.67	1975
Apr.	5.58	8.41	1970	2.79	1975
May	5.95	8.55	1968	2.65	1974
Jun.	7.57	9.18	1969	4.24	1965
Jul.	8.20	9.12	1966	6.75	1965
Aug.	8.24	8.77	1966	7.75	1972, 1967
Sept.	8.20	8.71	1966	7.45	1974
Oct.	8.08	8.90	1969	6.67	1974
Nov.	7.64	8.90	1969	5.40	1974
Dec.	7.36	8.50	1969	6.10	1970

Period of Record: 1960 to Present

TAMIAMI CANAL AT 40 MILE BEND, NEAR MIAMI, FLORIDA
(02288990)

Jan.	8.18	8.84	1970	7.84	1974
Feb.	8.00	8.77	1970	7.24	1974
Mar.	7.56	8.84	1970	6.12	1974
Apr.	6.94	8.81	1970	5.25	1974
May	7.04	8.63	1969	5.07	1974
Jun.	7.91	9.17	1969	5.62	1973
Jul.	8.38	9.08	1969	7.42	1971
Aug.	8.47	9.05	1969	8.03	1965
Sept.	8.44	9.06	1969	7.09	1971
Oct.	8.53	9.22	1969	8.08	1963
Nov.	8.42	9.21	1969	7.90	1963
Dec.	8.30	9.05	1969	7.71	1963

Period of Record: 1939 to Present

TAMIAMI CANAL OUTLETS: LEVEE 30 TO LEVEE 67-A
(0228906)

Month	Mean	Max.	Year	Min.	Year
Jan.	6.83	7.64	1970	6.38	1975
Feb.	6.65	7.56	1970	5.74	1974
Mar.	6.24	7.38	1970	4.62	1974
Apr.	5.59	7.28	1970	3.51	1974
May	5.45	7.13	1969	1.67	1971
Jun.	6.22	7.76	1969	3.46	1973
Jul.	6.77	8.01	1966	5.53	1965
Aug.	6.87	8.02	1966	6.11	1965
Sept.	6.97	7.96	1966	6.35	1965
Oct.	7.13	8.07	1969	6.59	1973
Nov.	7.01	8.05	1969	6.56	1974
Dec.	6.92	7.80	1969	6.53	1963

Period of Record: April 1963 to Present

TAMIAMI CANAL OUTLETS: LEVEE 67-A TO 40 MILE BEND
(0228904)

Jan.	8.85	10.18	1970	8.04	1964
Feb.	8.56	9.72	1969	7.56	1964
Mar.	8.20	9.61	1970	7.12	1974, 1964
Apr.	7.85	9.59	1970	6.06	1963
May	7.76	9.45	1970	5.41	1963
Jun.	8.29	10.07	1969	6.41	1963
Jul.	8.81	10.16	1966	7.12	1963
Aug.	9.28	10.17	1976	6.98	1963
Sept.	9.63	10.32	1976	7.62	1963
Oct.	9.73	10.51	1968	8.52	1963
Nov.	9.54	10.47	1968	8.26	1963
Dec.	9.14	10.31	1968	8.26	1963

Period of Record: August 1954

1976 DISCHARGE DATA

9-230 b
(Rev. 7-57)

GEOLOGICAL SURVEY (WATER RESOURCES DIVISION)

Station Number P. Rose

Taylor Slough at Bridge - Discharge 1976 (cfs)

DAY	JAN	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1	0	0	0	0	0	56	198	21	74	—	7.0	0
2	0	0	0	0	0	58	182	24	80	—	7.1	0
3	0	0	0	0	0	57	157	24	121	—	41.0	0
4	0	0	0	0	0	56	128	30	148	92	64	0
5	0	0	0	0	0	53	106	50	157	84	59	0
6	0	0	0	0	0	53	87	53	156	74	50	0
7	0	0	0	0	0	55	74	53	162	65	40	0
8	0	0	0	0	0	64	63	53	148	57	31	0
9	0	0	0	0	0	70	57	55	137	54	24	0
10	0	0	0	0	0	106	55	60	119	50	19	0
11	0	0	0	0	0	173	53	60	110	47	15	0
12	0	0	0	0	0	224	52	57	101	44	12	0
13	0	0	0	0	0	254	47	52	92	40	11	0
14	0	0	0	0	0	271	40	47	97	36	9.6	0
15	0	0	0	0	0	269	34	42	184	32	7.8	0
16	0	0	0	0	0	258	28	41	267	27	6.3	0
17	0	0	0	0	0	225	26	45	281	24	4.4	0
18	0	0	0	0	0	242	22	48	269	21	3.0	0
19	0	0	0	0	0	280	19	88	250	19	4.1	0
20	0	0	0	0	0	280	16	154	273	18	9.5	0
21	0	0	0	0	0	263	13	173	252	17	9.5	0
22	0	0	0	0	0.12	233	14	167	234	15	8.7	0
23	0	0	0	0	0.54	212	17	151	223	13	6.9	0
24	0	0	0	0	0.27	237	16	132	230	12	5.4	0
25	0	0	0	0	0	267	13	121	219	12	4.0	0
26	0	0	0	0	0	255	11.0	112	196	11	2.8	0
27	0	0	0	0	0	227	8.7	101	169	10	1.7	0
28	0	0	0	0	0.97	202	7.4	100	145	9.1	0.79	0
29	0	0	0	0	9.40	187	7.7	91	126	8.7	0.11	0
30	0	0	0	0	38.0	207	13.0	79	106	8.0	0	0
31	0	0	0	0	52.0	—	17.0	73	—	7.5	—	0
Total	0	0	0	0	101.30	5394	1581.8	2357	5126	907.3	464.7	0
$\bar{x}$	0	0	0	0	3.26	179	51.0	76.0	170	32.4	15.49	0
MAX	0	0	0	0	52	280	198	173	281	92	64	0
MIN	0	0	0	0	0	53	7.4	21	74	7.5	0.11	0

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(Rev. 7-67)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY (WATER RESOURCES DIVISION)

Station Number R. Rose

121

Tamiami Canal Outlets: 40 Mile Bend to Monroe - Discharge - 1976
(02288900)

DAY	JAN	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1	18	5.1	15	0	0	22	499	198	663	948	90	38
2	18	5.6	14	0	0	26	456	175	633	967	83	38
3	18	5.5	11	0	0	39	409	180	684	910	85	38
4	17	5.0	9.4	0	0	62	365	232	674	877	80	37
5	17	4.7	7.5	0	0	86	317	250	645	814	71	37
6	17	4.5	6.1	0	0	110	285	270	663	760	65	36
7	17	4.2	5.7	0	0	145	262	343	655	729	61	36
8	16	3.8	6.4	0	0	249	302	352	599	722	56	36
9	16	3.4	5.7	0	0	512	343	330	574	689	51	34
10	17	3.0	4.6	0	0	573	365	302	534	629	48	34
11	17	2.8	3.6	0	0	683	412	273	492	572	45	34
12	16	2.5	2.7	0	0	736	404	250	471	524	43	34
13	16	2.3	2.1	0	0	827	390	244	807	480	44	34
14	16	2.0	1.7	0	0	859	371	247	733	429	43	32
15	15	1.9	1.3	0	0	932	330	297	882	393	42	31
16	15	1.7	1.0	0	0	940	309	319	1090	360	41	29
17	14	1.6	0.78	0	0	884	308	354	1110	334	40	28
18	12	1.4	0.49	0	0	825	316	452	1010	298	40	25
19	11	1.3	0.29	0	0	826	286	569	948	274	39	24
20	11	1.2	0.13	0	0	246	256	631	884	256	39	22
21	10	1.1	0	0	0	796	226	672	901	236	42	29
22	9.8	0.99	0	0	0	722	214	735	903	204	50	28
23	9.2	0.90	0	0	0	716	210	784	901	184	46	28
24	8.6	0.78	0	0	0	675	196	973	907	167	44	59
25	7.9	4.4	0	0	0	626	191	946	983	155	42	60
26	7.5	13	0	0	0	668	165	917	991	140	41	56
27	7.1	12	0	0	0	728	135	868	951	129	41	51
28	6.9	11	0	0	0.15	653	156	844	914	121	41	46
29	6.3	16	0	0	5.6	602	233	796	866	113	40	46
30	5.7	—	0	0	1.1	540	229	746	838	103	39	44
31	5.2	–	0	0	18	—	218	744	—	97	—	42
TOTAL	398.2	123.67	99.49	0	34.75	16908	9158	15293	23906	13614	1532	1146
x̄	12.8	4.26	3.20	0	1.12	563	295	493	796	439	51	36.9
MAX	18	16	15	0	18	940	499	973	1110	967	90	60
MIN	5.2	0.78	0	0	0	22	135	175	471	97	39	22
AC-FT	790	245	197	0	69	33540	18160	30330	47420	27000	3040	2270

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(Rev. 7-67)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY (WATER RESOURCES DIVISION)

Number P. Rose

122

TAMIAMI CANAL OUTLETS: MONROE TO CARNESTOWN - 1976 DISCHARGE
(02288800)

DAY	JAN	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1	13	1.9	76	1.6	3.6	189	1260	975	1100	1010	159	83
2	9.2	2.4	77	0.67	10	176	1220	1080	987	981	150	82
3	8.0	3.4	64	0	28	191	1080	1270	957	818	155	76
4	7.9	4.0	53	0	42	298	918	1370	945	678	147	70
5	4.9	4.6	54	0.07	29	445	856	1390	907	702	137	64
6	3.8	5.4	86	4.4	20	565	1260	1390	800	862	125	62
7	3.4	6.6	92	9.8	15	635	1350	1470	750	774	118	65
8	4.1	8.1	87	10	14	736	1320	1250	776	727	112	66
9	2.8	9.4	79	6.9	14	893	1580	1090	754	734	104	53
10	0.37	13	68	1.5	22	1010	1440	986	668	758	99	44
11	0.01	12	50	0.81	40	1260	1230	1050	627	747	97	44
12	0.18	16	36	1.8	37	1320	1090	1050	655	704	96	48
13	0.14	16	28	2.2	39	1270	975	1010	790	627	95	47
14	0	16	25	2.3	56	1170	898	972	749	550	91	51
15	0	16	23	1.9	53	1050	829	1070	647	487	89	84
16	0	15	26	0.81	74	999	858	1170	673	431	86	80
17	0	18	25	0.36	72	903	1010	1190	681	386	82	72
18	0	22	15	0.20	61	864	821	1380	839	412	81	60
19	0	19	9.9	0.07	50	745	645	1570	1020	403	90	52
20	0	13	9.0	0.25	49	684	500	1630	1130	364	88	51
21	0	11	8.0	4.1	66	642	424	1680	1140	341	90	85
22	0	12	6.4	3.8	72	640	594	1730	1120	315	95	76
23	0	7.5	4.8	2.0	108	682	897	1770	1140	284	83	75
24	0	1.5	1.4	1.4	120	719	1130	1710	1210	254	74	153
25	0	8.0	0.46	1.7	107	769	1040	1640	1480	232	67	148
26	0	11	0.75	2.5	98	797	979	1540	1390	223	63	160
27	0	14	1.5	1.8	79	767	928	1440	1230	220	65	158
28	0	21	2.0	1.4	145	764	803	1330	1220	205	64	151
29	0	71	1.6	0.65	407	930	694	1200	1040	190	62	152
30	1.0	—	1.3	0	318	1140	837	1100	902	178	62	144
31	1.5	—	1.4	—	228	—	922	1020	—	171	—	139
$\bar{x}$	1.97	13.0	32.6	2.16	79.8	775	980	1307	944	508	97.5	86.9
MAX	13	71	92	10	407	1320	1580	1770	1480	1010	159	160
MIN	0	1.5	0.46	0	3.6	176	424	972	627	171	62	44
AC-FT	120	751	2010	129	4910	46120	60270	80380	56190	31280	5800	5350

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UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY (WATER RESOURCES DIVISION)

Station Number P. Rose

TAMIAMI CANAL OUTLETS: 67A to 40 MILE BEND - 1976 DISCHARGE
(02289040)

DAY	JAN	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1	400	256	120	40	35	50	942	177	450	2350	809	758
2	398	264	119	42	46	51	947	176	612	3590	1150	675
3	396	275	117	39	59	53	948	177	611	2370	1130	673
4	388	230	118	36	75	55	945	177	610	2320	1120	666
5	387	191	117	32	74	56	942	177	607	2390	1030	668
6	380	191	118	30	64	57	942	178	605	2300	983	662
7	376	191	113	38	53	58	798	183	604	2090	983	644
8	371	190	120	33	45	58	532	183	608	1380	989	639
9	377	189	112	34	39	60	488	184	803	829	981	646
10	374	186	111	33	41	60	500	183	999	858	951	637
11	357	179	111	34	51	63	506	189	1000	866	957	630
12	358	179	113	37	59	65	518	191	1020	873	940	631
13	356	178	110	36	61	66	522	190	1010	874	951	624
14	360	175	79	32	63	67	519	190	1000	873	950	624
15	363	172	58	30	62	68	520	191	1000	866	927	622
16	362	171	56	30	76	305	518	191	1310	860	924	608
17	356	162	61	34	56	422	516	191	1500	854	922	607
18	355	157	61	34	30	425	512	190	1490	855	917	609
19	355	155	59	43	37	439	508	194	1510	853	907	599
20	352	126	56	50	36	446	509	198	1480	851	894	592
21	343	105	56	42	37	446	508	199	2120	851	891	589
22	340	103	54	40	38	450	332	200	2300	850	901	593
23	339	102	55	36	39	458	177	200	2510	844	890	524
24	328	105	55	33	43	459	176	205	2200	837	865	469
25	317	106	54	26	44	665	175	206	2210	823	868	472
26	306	114	53	22	45	887	176	207	2270	821	861	465
27	300	114	48	20	41	896	177	208	2390	819	850	466
	304	117	48	23	42	908	179	209	2420	813	845	465
	294	119	47	37	48	937	177	207	2470	819	837	461
	273	—	49	3[illegible]	48	935	178	208	2360	816	828	460
	273	—	45	—	49	—	178	206	—	809	—	466
	10838	4802	2493	1031	1536	9965	15565	5965	42059	38204	28051	18241
x̄	349	165	80.4	34.3	49.5	332	502	192	1401	1232	935	588
MAX	400	275	120	50	76	937	948	209	2510	3590	1150	758
MIN	273	102	45	20	30	50	175	176	450	809	809	460
AC-FT	21500	9520	4940	2040	3050	19770	30890	11830	83420	75780	55640	36180

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UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY (WATER RESOURCES DIVISION)

Station Number P. Rose

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TAMIAMI CANAL OUTLETS: LEVEE 30 to LEVEE 67A - 1976 DISCHARGE
(02289060)

DAY	JAN	FEB.	MAR.	APR	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
1	17	13	37	0.38	0	97	105	55	270	189	104	77
2	16	13	34	0	0	85	94	58	259	192	100	75
3	17	13	31	0	0	97	90	60	242	188	158	73
4	17	13	28	0	0	110	87	63	233	179	143	70
5	17	12	26	0	0	115	80	65	217	175	137	68
6	18	12	22	0	0	110	73	77	206	169	131	65
7	18	12	21	0	0	89	71	106	190	168	124	65
8	19	10	19	0	0	73	68	110	199	164	119	64
9	19	9.6	16	0	0	62	65	105	197	162	113	60
10	18	8.2	14	0	0	68	65	102	177	159	107	58
11	18	7.8	11	0	0.07	83	65	102	164	156	106	56
12	18	7.6	9.0	0	2.1	83	73	96	163	151	105	55
13	19	7.3	9.7	0	3.2	87	65	97	157	144	107	53
14	19	7.1	9.5	0	3.3	83	71	98	161	146	106	52
15	18	6.9	9.9	0	2.7	87	68	98	166	142	105	52
16	20	6.7	9.4	0	28	90	65	110	186	138	102	50
17	19	6.4	12	0	23	90	73	114	186	141	100	47
18	16	6.1	11	0	29	94	65	122	187	140	98	43
19	15	5.5	11	0	18	105	71	203	202	140	96	41
20	15	5.2	9.4	0	12	117	68	219	197	140	94	40
21	14	4.7	8.9	0	14	107	68	219	206	137	100	42
22	15	4.4	8.8	0	30	105	80	232	203	134	105	39
23	14	3.8	10	0	29	105	71	242	192	129	98	38
24	13	3.4	8.2	0	26	101	71	305	203	126	94	48
25	12	14	7.2	0	14	105	65	298	202	128	92	46
26	12	27	6.7	0	8.1	108	76	289	199	127	90	44
27	12	45	6.0	0	8.3	101	76	283	198	126	88	41
28	13	41	5.9	0	77	94	80	284	190	121	87	39
29	11	42	5.0	0	170	83	73	277	188	118	85	39
30	11	—	4.5	0	137	80	66	272	185	112	82	38
31	10	—	2.0	—	118	—	59	262	—	109	—	38
$\bar{x}$	15.8	12.6	13.6	0.38	24.2	93.8	73.3	162	197	146	105	52.1
MAX	20	45	37	0.38	170	117	105	305	270	192	158	77
MIN	10	3.4	2.0	0	0	62	59	55	157	109	82	38
AC-FT	972	729	839	0.8	1490	5580	4510	9960	11740	9020	6300	3210

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